

# NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

February 24, 2003 ■ Volume 20, Number 8



**'Net Buzz** Opinions, insights from Demo 2003

By Paul McNamara

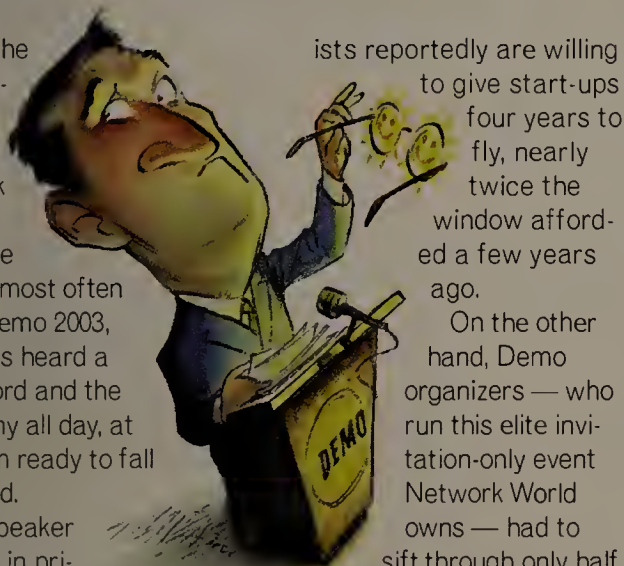
## Optimism abounds ...justified or not

**W**hen will the evil economy finally lift its foot off the neck of our industry? "Soon" was the answer offered most often at last week's Demo 2003, where rarely was heard a discouraging word and the skies, if not sunny all day, at least didn't seem ready to fall on anyone's head. Speaker after speaker — on stage and in private — emphasized the approach of better times, while muttering the obligatory qualifiers.

A cynic might say rose-colored eyewear was in high fashion, but there were few cynics on the grounds.

"It's a great time to start a company," said Julio Estrada, founder of Kubi Software, an e-mail-based collaboration newcomer that drew well-deserved praise. "The talent we've been able to put together is unbelievable... and our recruiting costs are zero."

Patience is again a virtue, we were told, as venture capital-



ists reportedly are willing to give start-ups four years to fly, nearly twice the window afforded a few years ago. On the other hand, Demo organizers — who run this elite invitation-only event Network World owns — had to sift through only half of the 1,000 companies screened in prior years to find this show's 61 invited vendors. The quality might be higher, but such a thinning of the herd doesn't come without a price.

There might have been a quiet undercurrent of concern about the economy — and war — but a ransom note couldn't get some of these entrepreneurs to acknowledge any serious misgivings.

"We've got people paying for

**See Buzz, page 62**

■ **Review:**  
Spam busters  
Cloudmark and  
MailFrontier go  
head to head  
at Demo. See  
page 42.

## Costs, security vex VoIP users

■ BY PHIL HOCHMUTH

WASHINGTON, D.C. — Return on investment and budget constraints are the biggest roadblocks to convergence projects.

Or so say large corporate customers attending last week's VoiceCon conference, where discussions focused on the business of planning, securing and cost-justifying IP telephony.

Despite the snow that inundated the East Coast last week, more than 3,000 attendees came to Washington to see keynote addresses, lively vendor debates and educational sessions. Money issues took center stage.

"We have to look at our current infrastructure and all the [computer telephony] applications

that are out there, and ask — what can be done on our current system that can't be done with IP? — before we go to the board [of directors] and ask them for money for a major technology change that will make them nervous," said Doug Crawford, director of network services for Kaiser Permanente, the largest nonprofit HMO in the U.S.

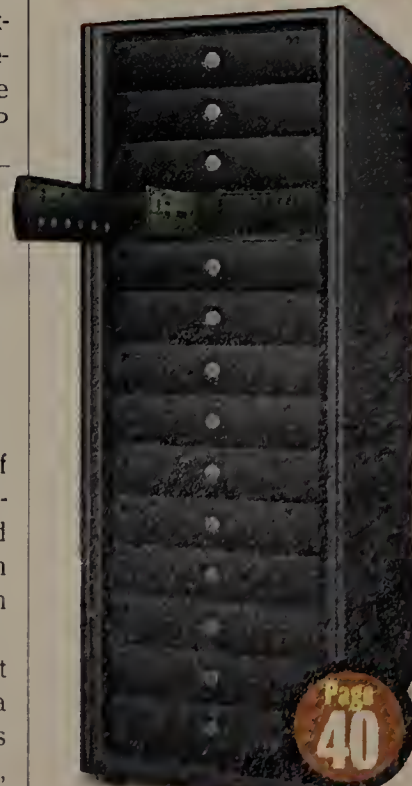
Crawford has hundreds of PBXs, thousands of pieces of network equipment to support and a \$25-million-a-year budget.

David Morgan, vice president of architecture and planning at Fidelity Investment Systems, said, "ROI is a real issue with the expansion of any of our IP telephony plans. I ask other people in my position, who may have IP

telephony pilots out, why they don't go all the way, and they say it's a money issue," and the ability to show ROI.

"I have a fixed IT budget and a  
**See VoiceCon, page 61**

## Blade servers attack data center



Page  
40

► The promise of high density and simplified management is drawing converts.

## Spammers hiding behind students

■ BY JOHN FONTANA

University networks already stressed by file-sharing programs, viruses and hackers now face a new threat: students who sublet their network access to spammers for as little as \$20 per month.

Tufts University, a 151-year-old school in Medford, Mass., last month discovered spammers were paying students to offer up their PCs as relay points that

helped mask the true source of the spam. While university network executives interviewed were not aware of other cases on U.S. campuses, the phenomenon has cropped up in Israel.

The problem came to light at Tufts after the school received a flood of complaints that its domain was the source of spam, says Lesley Tolman, director of networks and telecommunications at Tufts. The practice isn't so

**See Spammers, page 60**



A man in a suit is sitting on a wide set of stone steps in front of a classical building with large columns. Several computer monitors are placed on the steps around him, some on the ground and some on the steps themselves. The monitors are arranged in a way that suggests a workflow or a series of tasks. The overall tone is professional and somewhat somber, reflecting the challenges of managing collaboration.

Document needs approval. Now.

Boss in China. File in Chicago.

Needs video conferencing

**Managing collaboration can be challenging.**  
**That's why there's Windows XP and Office XP.**

Recognize any of those issues? Or, perhaps, all of them? We thought so. Many of these issues can be related to your legacy desktop software; fortunately, many of them can be addressed by features in Microsoft® Windows® XP Professional and Office XP Professional. Want specific





Microsoft

Client wants real-time updates

Wants to share ideas

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examples? Windows XP Professional offers built-in audio and video-conferencing capabilities that make the whole experience easy and intuitive for your end users. With the Send for Review feature, Office XP Professional lets users easily assign roles to everyone involved in the document review

cycle, while automatically providing the correct tools for each reviewer and allowing changes to be easily merged back into the original document. And finally, several new features make deployment easier than ever. For more ideas about managing your desktops, visit [microsoft.com/desktop](http://microsoft.com/desktop)



Where does  
it hurt?

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## NetworkWorldFusion

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## Interactive

### Online exclusive: Life sciences spotlight

After reading how technologies are transforming the life sciences industry in our Sector Spotlight (page 46), head online to see how regulatory requirements for the industry pose a major data storage and management challenge.

**DocFinder: 4438**

### Weblog: Live from Demo

Our editors give you the inside scoop on the latest products that made their debut at Demo last week.

**DocFinder: 4338**

## Seminars and Events

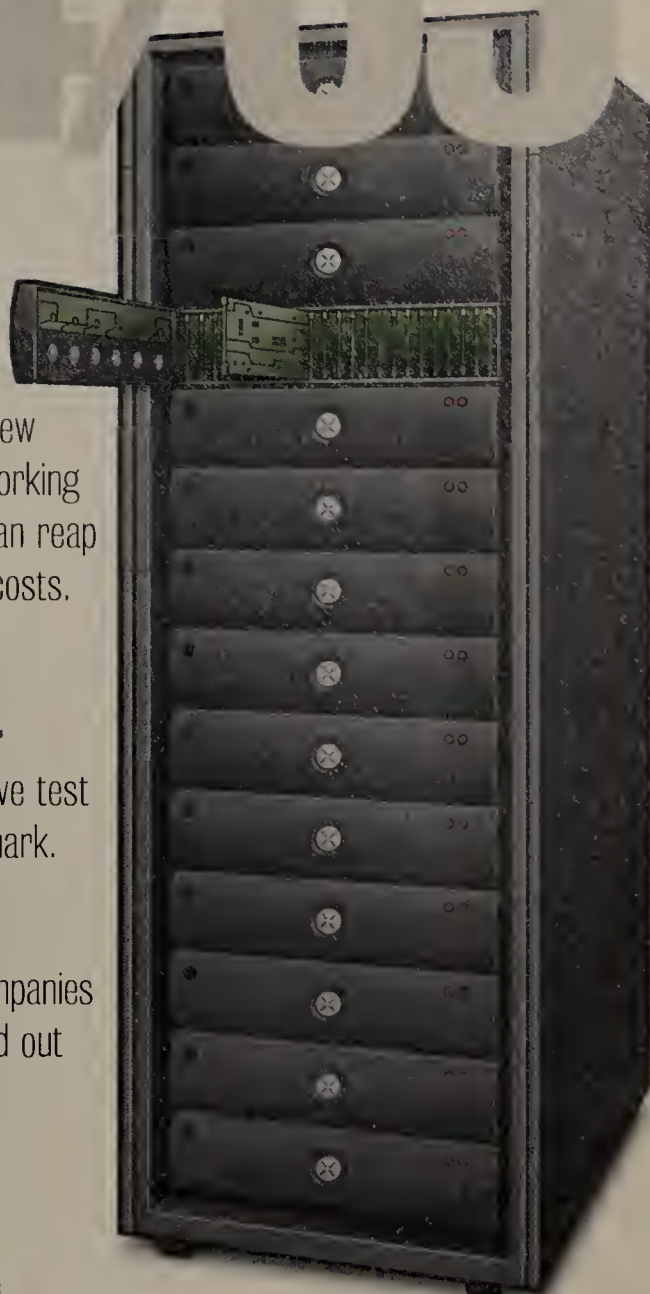
### Get the latest on wireless technology

Wireless LAN technology is one of the hottest IT topics today. Join Tom Henderson for Network World's Technology Tour, "Wireless LANs: Building and Managing a Well-Integrated 802.11 Network," and discover how you can seamlessly meld wireless technology into your company today.

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TROY DOOLITTLE

## Columnists

### Compendium

An Epiphany in Web browsers  
Fusion Executive Editor Adam Gaffin focuses on Epiphany, the new Web browser for the Linux GNOME set.

**DocFinder: 4439**

### Telework Beat

Virtual call centers fight to keep jobs in the U.S.  
Net.Worker Managing Editor Toni Kistner talks to call center experts, who cite better quality of service and national security concerns as reasons those jobs should stay on home soil.

**DocFinder: 4440**

### Small Business Tech

In Columnist James Gaskin's review of Buffalo Technology's AirStation 802.11g he says the router is full-featured, easy to set up. **DocFinder: 4441**

### Home Base

Home-office tax fallacies  
Not sure whether to take the home-office deduction?  
Columnist Jeff Zbar offers advice on smart filing.

**DocFinder: 4442**

### What is DocFinder?

We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested information.



## News

## Bits

## Recording industry warns network owners

■ The Record Industry Association of America, in conjunction with the Motion Picture Association of America, last week mailed a brochure to the Fortune 1000 companies that warns them to prevent copyright abuses on their computers and networks or face consequences. The guide suggests that companies should advise employees against unauthorized copying of music and videos, because doing so puts employers in legal jeopardy. RIAA noted that companies can face stiff fines for violations. For example, Integrated Information Systems paid a \$1 million settlement last April when employees were found to be accessing and distributing music files on the company server.

## Ex-Microsoft exec fires parting shot

■ Microsoft must embrace the diversity of open source software or face oblivion, David Stutz, a departing Microsoft executive, wrote in his farewell letter to the company when he retired last month. Stutz, a respected technical thinker at Microsoft, sees networked software as the future for computing. "If Microsoft is unable to innovate quickly enough or to adapt to embrace network-based integration, the threat that it faces is the erosion of the economic value of software being caused by the open source software movement," Stutz wrote in the letter that he posted on his Web site. "Useful software written above the level of the single device will command high margins for a long time to come. Stop looking over your shoulder and invent something!" he wrote to Microsoft. "If the PC is all that the future holds, then growth prospects are bleak." Microsoft said in a statement that it "agrees with much of the vision Dave [Stutz] has for the future." However, the company added that it believes "breakthrough innovations will come mostly from commercial software companies such as Microsoft."

## Google grabs Weblog company

■ Search powerhouse Google has acquired Pyra Labs, the company behind Weblog site Blogger, giving it a boost in Web content and services. The acquisition, which was disclosed in a posting on the Blogger site, also will let Google leapfrog into the burgeoning Weblog market, which has been gaining steam as increasing numbers of 'Net users discover the ease of use and flexibility of online publishing. Weblogs are Web pages con-

## ■ TheGoodTheBadTheUgly



**Heard at Demo 2003.** You know the mind-numbing children's song "Wheels on the Bus"? Well, Demo attendees were treated to a hypnotic rock version that had parents in the crowd asking where the recording can be bought. Here's where: [www.mothergooserocks.com](http://www.mothergooserocks.com).



**Divine intervention needed.** Business incubator-turned-software conglomerate Divine last week said that after months of cost-cutting moves, it will explore strategic alternatives — including filing for bankruptcy protection — to ensure continued operations. The company was founded in 1999 by the colorful Andrew "Flip" Filipowski, who has expanded Divine through dozens of acquisitions much in the same way he grew his earlier company, Platinum Technologies, before selling it to Computer Associates. With Divine racking up \$160 million in losses for the first nine months of 2002, having CA come to the rescue this time around might be a long shot. ➤



**The trouble with Wi-Fi.** At last week's Demo conference half the audience members were on their wireless laptops connected to the 'Net over 802.11b. These are some of the most tech-savvy people on the planet, a collection of entrepreneurs, venture capitalists and industry gurus . . . and yet, there was Joel Snyder, a Network World Global Test Alliance member, sitting in the room, running a sniffer program that was picking up lots of unencrypted, unprotected wireless traffic, including IP addresses and passwords. With a simple mouse click, he opened an e-mail. Scary stuff when you consider that even people supposedly in the know aren't taking security seriously.



BRIAN GAIDRY

sisting of short, frequently updated posts, much like a diary. Four-year-old Pyra Labs, which is in San Francisco, has managed to make a significant foothold in Weblogging — also known as "blogging" — growing its base of registered users to more than 1 million. The basic service is free, although the company does have a premium version. Terms of the deal were not announced.

## Security flaws flagged in Domino

■ Three security flaws could let attackers run malicious code on machines running IBM's Lotus Domino or iNotes software. Next Generation Security Software, a consulting company in Sutton, England, disclosed the flaws last week. Using a vulnerability in the iNotes messaging software, a remote attacker could gain control of a Domino server by providing an overly long value in a request for Web-based mail services. A second vulnerability affects the Domino 6 application server software. Using the flaw, an attacker could create a buffer overrun by supplying false and excessively long host names in a request for a document or view that is stored in a Lotus database. After triggering the overrun, attackers could execute their own code under the account running the Domino Web Service process, gaining control of the Domino server. A third vulnerability, found in an ActiveX client control used by the iNotes software, allows an attacker to execute malicious code on a remote machine that is attempting to use iNotes Web-based messaging features. The vulnerabilities, which were found in Release 6.0 of Lotus Notes and Domino, have been patched by IBM in the 6.0.1 maintenance release.

## IDC: Asia soon to be tops in developers

■ The region with the highest number of developers in the world soon will be changing, according to IDC. While North America claimed this top spot in 2001, IDC is predicting that by 2005, Asia-Pacific will have the most people employed in the field. Over the next five years, the growth in this region — particularly in China and India — is expected to be much greater than in North America.

## COMPENDIUM

## Open source at Network World

**File this under: Right tool for the job.** Network World is an Oracle shop, but Fusion Executive Editor Adam Gaffin explains why Network World Fusion is installing the free MySQL database — to support a Weblogging application that works with the latter but not the former. Read more at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 4446.



ON ■ ■ ON

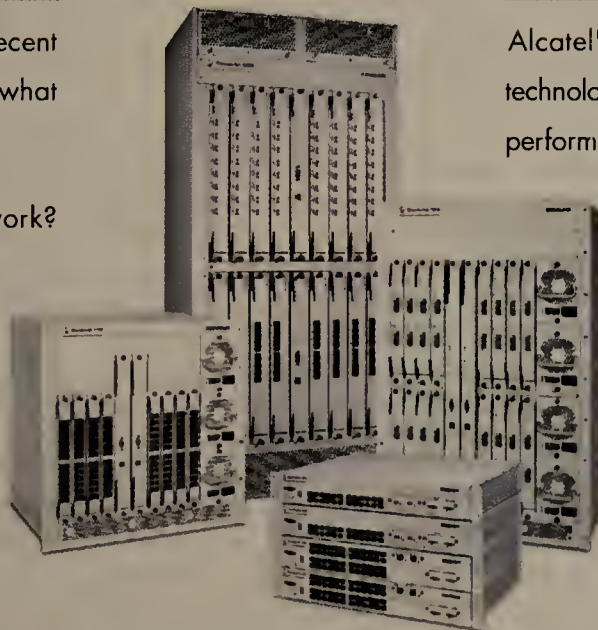


## Building carrier class enterprise networks

**Availability** in enterprise networks has improved in recent years – but it's come at a price, and still doesn't approach what you expect from carrier networks.

Is your data network less important than your voice network? In many cases, it's even more critical.

Building a carrier class enterprise network means continuous network operation from the **edge to the core**, so that network failures have zero impact to the end user and mission-critical applications are always accessible.

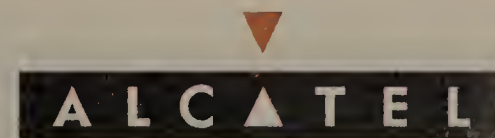


Alcatel's next-generation enterprise products have integrated technologies that **ensure carrier class availability** and high performance to the enterprise, **without a cost premium**.

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## OASIS gives OK to Web services standard

■ BY JOHN FONTANA

Corporate demand for better Web services security technology got another shot in the arm last week after a standards body finalized work on an XML-based access control protocol.

The Organization for the Advancement of Structured Information Standards (OASIS) gave its stamp of approval to the Extensible Access Control Markup Language (XACML), which has been in development for almost two years. The standard is designed to alleviate the patchwork of access control policies companies use today that are written in proprietary languages specific to each device or application, an inflexible system that creates an administrative nightmare.

XACML includes an access control language and request/response language that let developers write policies dictating what users can access on a network or over the Internet. XACML likely will show up in firewalls, servers and Web access management software but also could be used as the basis for gateways to connect disparate access control policy engines.

"XACML is for any point on the Internet that has to make a decision on authorization," says Hal Lockhart, co-chair of the XACML technical committee at OASIS.

OASIS also is working on the Security Assertion Markup Language (SAML), which was ratified late last year. XACML and SAML are complementary in supporting identity management and authentication and authorization for Web services.

"XACML builds on SAML to ensure the right people have access to the right things at the right time," says Jamie Lewis, president of Burton Group.

But Lewis says companies will still have to work out the differences between their access policies. "XACML won't make Company A's policies automatically meaningful to Company B," he says.

IBM and Sun are among the major players supporting XACML. ■

## Hunt for worms shifts to LAN traffic

Intrusion-prevention system vendors introduce devices for containing Slammer-like outbreaks.

■ BY ELLEN MESSMER

Some makers of intrusion-prevention systems designed to actively block harmful traffic such as last month's MS-SQL Slammer worm are arguing that strategies should shift from guarding the corporate Internet perimeter to setting up IPS appliances deep within the LAN.

By deploying an IPS internally, a company can detect and automatically block any worm outbreak that might occur across the LAN if employees or business partners with internal access introduce one into the system. Silicon Defense and TippingPoint Technologies separately are introducing such products this week. The approach remains novel because companies are just warming to the notion that they automatically should block traffic at all, even at the Internet perimeter.

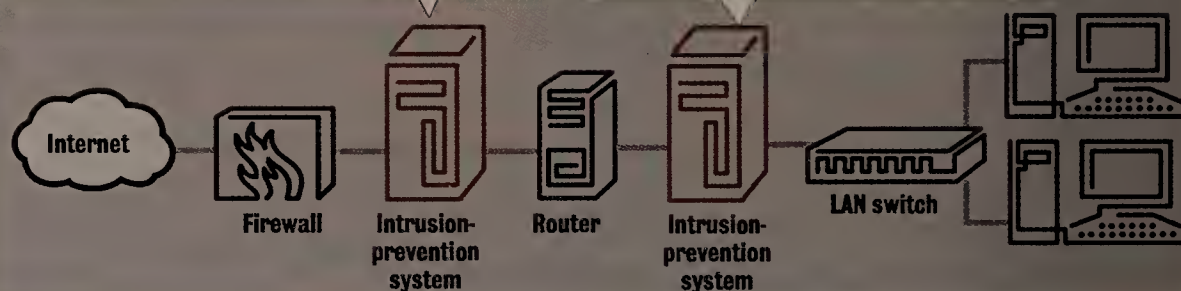
Managed security firm Ubizen recently produced a report on Slammer, noting that although the worm was "easily stoppable on the perimeter infrastructure," some of its customers were hit

### An inside job

The latest intrusion-prevention systems are designed to catch those worms that attack from deep inside a corporate network.

1 The first wave of IPS boxes sit at a corporate network's perimeter to block worms or denial-of-service attacks emanating from the Internet.

2 The latest versions sit behind a router to block attacks introduced by employees or e-business partners.



detected and blocked.

"You have to react within seconds, and you must have an automated engine," Saniford says. "Waiting for a systems administrator is hopeless. The goal is to contain it early."

Rather than use signature-based detection, CounterMalice blocks worm activity through a process largely based on recognizing aberrant IP traffic patterns — Saniford calls it "IP behaving

1.2G bit/sec, and UnityOne 2400 reaches 2.4G bit/sec. Each has eight ports that support Ethernet, Fast Ethernet or Gigabit Ethernet speed internal LANs. The same management console can configure and receive reports from all three devices, which can block about 850 types of attacks. They cost \$43,000, \$65,000 and \$97,000, respectively.

"The UnityOne 2400 is best for use inside a data center," CEO John McHale says. TippingPoint has added failover capability to the appliances so Layer 2 switching takes over if the in-line appliance fails. The devices support several routing protocols, including Interior Gateway Protocol.

While TippingPoint still advocates deploying an IPS at the Internet perimeter to stop worms and other types of attacks, installing an IPS internally is an additional safeguard, McHale says.

One UnityOne customer says that is the approach he takes. At the University of Dayton in Ohio, it's not uncommon for students to introduce computer viruses via their laptops onto the campus LAN, CIO Tom Danford says. The university uses UnityOne 2000 inside the LAN.

"There's always the possibility we might be blocking legitimate traffic, but in our experience, it always ends up being malicious," Danford says.

By May, TippingPoint expects to add ways to use the appliances internally to prevent copyright violations.

Most organizations today deploy what's known as "passive intrusion-detection systems" that monitor and report suspicious activity, but don't block it. IPS

appliances, including those from IntruVert Networks, NetScreen Technologies, Internet Security Systems, Top Layer Networks and Check Point, are not widely accepted.

Expect to see more intrusion-prevention products from traditional intrusion-detection system (IDS) vendors.

"IPS are the next generation of firewalls at the proxying level," says Martin Roesch, Sourcefire's president. "We're planning on releasing an IPS product, probably later this year. But we still think you will need both IDS and IPS as a surveillance and network-monitoring technology."

Network World, the Tolly Group and NSS Group are among the organizations planning to test the active blocking capability of IPS products later this year. ■



**“A worm is always going to get inside your organization, and you need worm containment inside.”**

Stuart Saniford  
CEO, Silicon Defense

from inside "trusted parties," including dial-up links, roaming laptops and third-party connections.

### 'Worm containment'

Silicon Defense CEO Stuart Saniford advocates for what he calls "worm containment," which is what his company says its CounterMalice product can do.

"A worm is always going to get inside your organization, and you need worm containment inside," Saniford says. CounterMalice is an appliance with 500M bit/sec throughput that's supposed to be installed across LAN segments based on an analysis Silicon Defense would do for the company so a worm that has begun to spread can be immediately

badly" — which might be, for instance, an outburst of scanning typical of worms in search of a new victim machine.

CounterMalice, which starts at \$25,000, has a rudimentary command-line interface, but that might improve by the time the product ships in April, according to Saniford.

### TippingPoint's bid

TippingPoint, which already sells the UnityOne 2000 signature-based intrusion-prevention appliance that reaches 2G bit/sec, is introducing three IPS appliances for use inside corporate networks.

UnityOne 400 supports 400M bit/sec, UnityOne 1200 supports



### THIS WEEK'S QUESTION:

What was the name of the company that created ICQ, the instant-messaging technology now owned by AOL?

Answer this and nine additional questions online and you could win \$500! Visit **Network World Fusion** and enter 2349 in the Search box.

**www.nwfusion.com**



# Enhancing Backup Strategies for Mission-Critical Information

*Quantum's DX30 solves backup and recovery bottlenecks with a disk-based solution that emulates a tape library.*

There is no alternative: When it comes to business success, corporations must have easy access to vital information, and they must have it immediately.

"IT management has been tasked to ensure that data is accessible 24 hours a day, 7 days a week," says Dave Kenyon, product line manager for Enhanced Backup at Quantum, a leading provider of storage solutions based in Milpitas, Calif. "When shrinking backup windows are compounded with increased backup and restore requirements, IT managers are forced to concentrate on the backup process and put other critical IT projects on-hold."

Clearly, the pressure is on for IS managers to provide timely, reliable backup and recovery services to ensure that business leaders can obtain vital information any time, anywhere. But just as corporate demands for data accessibility have risen to an all-time high, so too has

the difficulty of quickly and reliably backing up that data. IS managers must grapple with the tough reality of backing up exponentially increasing amounts of company data in a steadily shrinking window of time, says Steve Kenniston, an analyst at Enterprise Storage Group, an independent research firm based in Milford, Mass.

"As companies become more global and people all over the world need to access data, there is no time during the night when nobody is trying to access information," he points out. Meanwhile, many companies report that their volume of stored data is growing at an annual rate of 40 percent to 75 percent.

This leaves data center folks between a rock and a hard place: Tape libraries can be just too slow to reliably back up data in the little time available. Moreover, it can take days to recover data that's stored on tape—days that many companies don't have.

But the CEO doesn't want to hear about how long it takes to back up data, reports Shane Jackson, Quantum's director of business development. "He just wants to know why his employees can't get at the data when they need to," says Jackson. "As a result, system administrators are in the hot seat—if they can't recover the data when they need to, it could mean their job, and if they take too long backing it up, it could mean the same thing."

***"As companies become more global and people all over the world need to access data, there is no time during the night when nobody is trying to access information."***

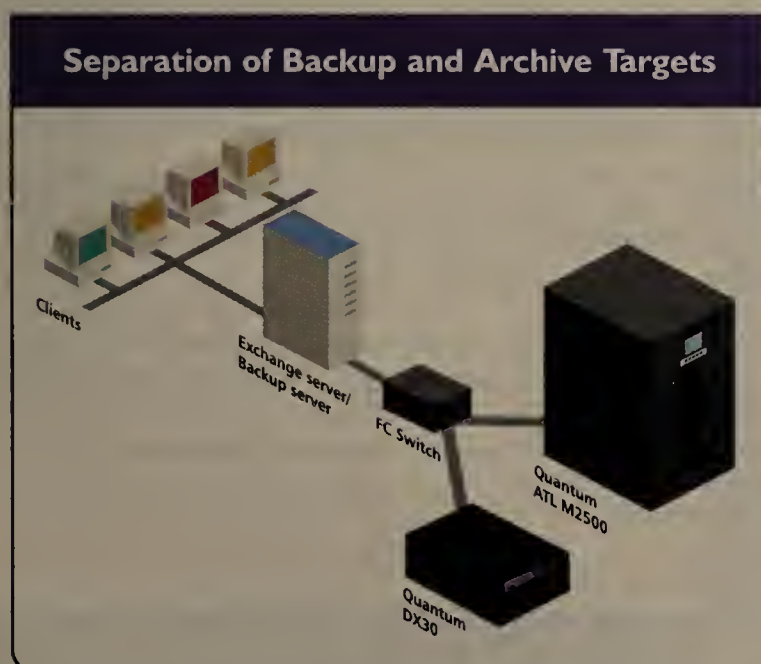
— Steve Kenniston,  
Analyst, Enterprise Storage Group

## The Answer: Implement an Enhanced Backup Strategy

Many experts advise companies faced with this intractable problem to enhance traditional tape-based backup technology with disk subsystems. For example, the Quantum DX30 disk-based backup system can address these critical problems by offering vastly increased backup and recovery speeds, better reliability and hassle-free implementation. "By storing mission-critical data on the DX30, IS employees can rest comfortably knowing that they can restore data rapidly and reliably, reducing downtime for business users," says Kenyon. The DX30 brings the following strengths to the data center:

- **Speed.** Rather than writing at the speed of tape, the DX30 runs at an 80 MB per second clip, which can cut backup and recovery time drastically. That translates into businesses not having to wait to access important data.
- **Reliability.** The DX30's hot-swappable disk drives further enhance its reliability.

*Continued on Next Right Hand Page*



**Learn how Enhanced Backup Strategies can protect your business with a **FREE** white paper and consultation from Quantum.**

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# VPN experts downplay 'splitting' headache

Most say split tunneling does not necessarily undermine security.

■ BY TIM GREENE

At a time when protecting corporate networks is paramount, many users are steering clear of a feature of IP Security VPNs called split tunneling, a move that can give a false sense that remote-access networks are more secure than they really are, experts say.

Split tunneling was created to allow Web surfing and corporate VPN access simultaneously from remote PCs. The benefit of split tunneling is that corporations can conserve bandwidth needed for Internet access at VPN hub sites and reduce the load on VPN gateways.

But with this feature, if a remote PC is connected directly to the Web and at the same time tied into the VPN, attackers coming on from the Web could commandeer the PC and gain access to the corporate network (see graphic, right).

"Vulnerabilities with the [PC's operating system] and the applications running on the client might expose the VPN, since the client machine is essentially act-

ing as a type of router," says Kurtis Lawson, a network engineer with NetCare Services, a network consultancy.

While this could happen, it is unlikely, experts say.

"The security threats are theoretically possible, but you should spend your time worrying about other things," says Paul Hoffman, executive director of the VPN Consortium, a group of VPN vendors working toward interoperability.

"Users need to make sure they don't rely on split tunneling to do more than it can provide," says Wray West, former CTO of VPN vendor Indus River, now part of Enterasys.

"It's one of the challenges of security. People are desperate to get a handle on it and can oversimplify it," he says. "Blocking split tunneling is a little safer than not blocking it, but not hugely safer."

## Shut off split tunneling

Shutting off split tunneling isn't a cure-all to fend off attacks, because the integrity of the remote PC doesn't have to be compro-

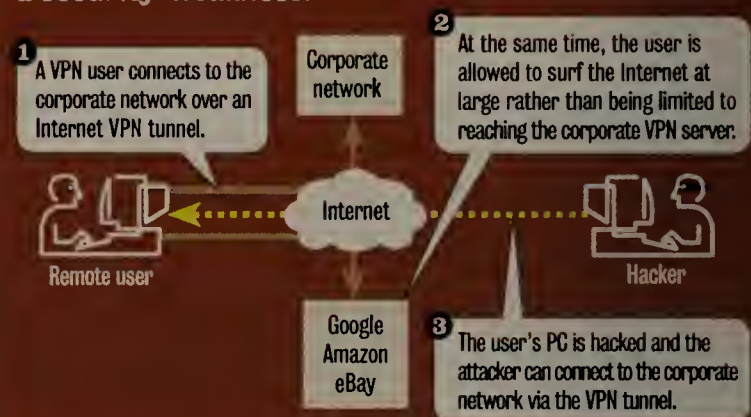
mised while it is connected to the VPN to cause damage. It can just as easily be compromised while the user is Web surfing with the VPN tunnel turned off, then do damage the next time the VPN is turned on. Viruses or back doors downloaded while surfing would threaten the VPN, West says.

Using personal firewalls on all the remote PCs would mitigate the threat of them being compromised, but properly installing, configuring and updating them would create more work. And remote users could disconnect them to free up processing power to improve Internet response time. Some VPN vendors, including Check Point, Cisco and NetScreen Technologies, are trying to combat this via optional policy servers that run configuration checks before remote PCs can log on.

The best way to rule out Web-borne attacks is to prevent all PC Internet use except to connect to the VPN, and that is just what a major Pennsylvania food manufacturer is doing, says the compa-

## Split tunnel threat?

Letting remote access VPN users surf the Internet while connected to the corporate VPN is viewed by some as a security weakness.



ny's network architect. While he could not allow use of his company's name, he says company-issued PCs are locked down by the IT staff before they are handed out so users cannot surf.

If split tunneling is denied, remote users still can surf the Web, but only through the VPN. In the absence of split tunneling, Web browsing is funneled over the

VPN to the central VPN gateway, tying up gateway processor time and eating up bandwidth on that site's Internet link. Then the traffic is routed back onto the Internet over the same link, eating bandwidth a second time.

Running Web traffic through the VPN subjects the traffic to screening by the corporate firewall and, for those who want it, to centralized content filtering to keep users away from restricted sites. Traffic coming through one router is easier to log.

But users also should be prepared to take the predictable hit on Internet bandwidth consumption when they turn off split tunneling, Hoffman says. If bandwidth and the load on the VPN gateway are not issues, then denying split tunneling will do no harm, he says.

For those who decide to allow it, experts recommend these precautions as a way to minimize risk:

- Require use of a personal firewall on remote PCs.
- Make sure PC operating systems and applications have updated security patches.
- Require use of virus-scanning software and update it religiously.
- Use a policy server that denies VPN access unless the remote machine has proper security installed and turned on. ■

# HP set to roll out IP storage router

Company also boosts performance of network-attached storage appliances.

■ BY DENI CONNOR

ORLANDO — HP will announce its entry into the IP storage market today with an iSCSI storage router, which lets SCSI data be transported across a Gigabit Ethernet network.

Although HP declined comment, the StorageWorks iSCSI router will debut at its ENSA@Work conference in Orlando.

Sources say the router attaches to the network via two Gigabit Ethernet ports and to storage arrays via two Fibre Channel connections. Cisco manufactured it for HP, but it will not be sold as a separate Cisco product.

At the ENSA@Work conference in Amsterdam last month, HP demonstrated a prerelease version of the product connected to a ProLiant BL10e blade server and a Fibre Channel storage-area network for configurations where network-attached storage (NAS) would not work. HP also demonstrated iSCSI over a wireless

Ethernet network.

Analysts say HP's support of iSCSI needs to go further.

"I don't see this to be a significant announcement," says Roger Cox, chief analyst for Gartner. "It reminds me of vendors that have

announced that they now [are upgrading their arrays to] support 146G byte disk drives."

"It is another step in the evolution of iSCSI, albeit a small one," says Anders Lofgren, senior analyst at Giga Information Group.

"The bigger question is, when will major storage vendors introduce native support for iSCSI on their array products, especially the mid-range offerings."

HP has claimed it will announce native iSCSI arrays in the next year. IBM and Network Appliance were the first major systems or storage vendors to introduce iSCSI arrays. EMC, Hitachi Data Systems and StorageTek have not announced plans.

In a related announcement, HP is expected to reveal that it has increased the performance of its StorageWorks b2000, b3000, e7000 and e8000 NAS appliances by as much as 40% by adding faster Intel processors.

The StorageWorks router costs \$10,000 and is available now. ■

## An iSCSI panoply

Here is a sampling of iSCSI products that lets SCSI data be transported across Ethernet networks.

Vendor	Product	Device
Alacritech	1000x1 single-port Server and Storage Accelerator	Adapter
Cisco	SN5420 and SN5428 Storage Routers	Switch
HP	Name unknown	Switch
IBM	TotalStorage IP Storage 200i	Storage array
Intel	Pro/1000 T IP Storage Adapter	Adapter
Network Appliance	F800, FAS900 filers	Array
Nishan Systems	IPS 3000 and 4000	Switch
SANRAD	SANRAD iSCSI V Switch	Switch
Stonefly Networks	Storage Concentrator i1000 and i1500	Switch

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Continued from Previous Right Hand Page

"If you have a tape drive fail, you might have a major interruption in your backup job; with a disk-based system the failure of one drive won't prevent you from completing a backup," says Jackson.

- **Ease of integration.** Implementing disk-based systems in a traditional tape environment can present significant integration challenges. Many industry experts point to the DX30 as a smart solution, because the system emulates the traditional automated tape library. The result? There's no need for a so-called "forklift upgrade," and companies don't waste the significant investments they've already made into tape libraries. "Because of Quantum's emulation approach, this is easy to use for a guy who already knows how to back up to tape," says Jackson. "The way you back up to a DX30 will be exactly the same."

In addition, tape management software from a host of vendors—such as Legato, Atempo and VERITAS Software—work perfectly with the DX30. Don Peterson, a senior product manager at VERITAS, says the DX30 is a system administrator's dream. "The Quantum DX30 provides a disk-based backup solution that operates seamlessly with existing tape backup software, such as VERITAS NetBackup," he says. "The DX30 simulates a tape library, so the administrator isn't required to learn a new backup paradigm, and it eliminates problems associated with tape media."

As companies rely ever more heavily on technology to conduct business, access to online information will only increase in importance. That's why smart IS managers will implement an enhanced backup strategy. After all, by supporting the needs of business users, they support the success of the business itself.

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## Building a Rock Solid Storage Strategy

*Database File Tech's reputation as 'The Fort Knox' of data storage rests securely on the DX30.*



*For Bob Gignac, director of business development at Database File Tech, buying the DX30 meant faster, more reliable data backup and recovery.*

The folks at Database File Tech (DBFT) understand the importance of corporate data. In their business, they have to. The Victoria, British Columbia-based organization has built a sterling reputation for safekeeping the electronic assets of myriad government agencies and corporations. The company's bunker-like vault of a building is anchored to a mile-wide plug of solid rock, able to withstand a 9.5 earthquake on the Richter scale. So when it came time to purchase disk-based backup for their company, small wonder the executives chose the speed and reliability of Quantum's DX30.

"People's data is our livelihood here," says Bob Gignac, the director of business development at DBFT. "We understand that corporate data is critical to corporations worldwide and that they need to be able to restore their data quickly in the event of a technical outage."

That need for speed led DBFT to search for a disk-based backup system in the summer of 2002. It was becoming obvious that the tape-based storage systems from Quantum's competitors couldn't keep up with the demands of the growing company. "Fast recovery is very important to our clients," says Gignac. "If they have a hard-drive crash, they need to be up and running in hours, not days. Their businesses demand it." Gignac and Maurice Auger, director of operations at DBFT, began reviewing the company's backup capabilities to look for a reliable alternative that would allow faster restoration of client data. They looked at disk-based products from companies such as EMC, Network Appliance and IBM. While fast and scalable, these

products were not simple to install in conjunction with the tape library already in use at DBFT. Their integration and management challenges caused Gignac and Auger to keep shopping. Finally, Atempo, DBFT's storage management software provider, suggested that Gignac take a look at the DX30 from Quantum. It was fast, scalable and didn't pose the integration challenges inherent in many disk-based storage subsystems. DBFT signed up for Quantum's trial program

for the DX30 and was immediately hooked. "It tested at 280 gigabytes per hour," Gignac says, and the fact that it works seamlessly with Atempo's Time Navigator meant that there was no integration problem at all—the software recognized the DX30 the minute it was plugged in.

As for reliability, Gignac says, "It's a joy. We tested the DX30 for about five months and it had no problems at all. Best of all, there are no worries about tapes deteriorating or ripping, or somebody having to change out tapes. That factor isn't even entered into the equation."

Best of all, DBFT clients, who access their data via the Internet, "have near instant access to their data," says Gignac. "They don't have to wait for a tape to be loaded."

The management team at DBFT is so bullish on the DX30 that they plan to use it extensively at the new remote mirrored facility under construction in Prince George at the University of Northern British Columbia's Research and Development Park. The new site will be equipped with another DX30 for its SANs. "It's enabling us to branch out," says Gignac. "Prior to implementing the DX30, our market was primarily Victoria, B.C., due to the physical nature of tape, as well as its transport and archival requirements. With the DX30, there are no geographical limits to our service."

In fact, Gignac says he can't see the end of the demand for DX30s at his company. "When you have clients with terabytes of data that they need stored, restored and protected, the DX30 is not only a good solution for our clients, it's good business for us."



# FCC review looked at as a split decision

■ BY MICHAEL MARTIN

WASHINGTON, D.C. — Industry observers are split over whether the unbundling rules the Federal Communications Commission issued last week favor incumbent local exchange carriers or their competitors.

While early interpreters viewed the decision as a blow to the ILECs, driving stock prices down, some see it as a win.

"The [regional Bell operating companies] will say they're not happy because the state regulators will have a role" determining how some of the rules are applied, says Thomas Nolle, president of telecom consultancy CIMI. "But realistically they come out of this with the key issue, which is basically universal exemption of new broadband infrastructure from unbundling."

The momentous decision, one of the most heavily lobbied telecom issues in recent years, deals with what network elements — broadband facilities, lines and switches — the ILECs have to make available to competitors on a so-called unbundled basis. It further spells out what role states will play in dictating what will be unbundled.

On the national broadband front, the FCC ruled that the ILECs will not have to share new fiber facilities to residential areas or businesses. The

ILECs have long complained that the requirement to share new facilities served as a disincentive to build out new plant.

Observers say this ruling could encourage the ILECs to start investing. But others say there's no guarantee that will happen, in part because the ILECs might have to get state approval before moving broadband customers from copper networks to fiber.

"The bottom line is this day was supposed to be a day of clarity, with the gun for investment in the broadband market finally going off," says Matthew Davis, an analyst with The Yankee Group. "But with this decision, the gun's still pointing up in the air unfired."

Also on the broadband front, the commission elected to phase out line-sharing over the next three years, a blow to competitive DSL providers such as Covad Communications.

Line-sharing lowers costs for DSL carriers by letting them provide service over the same copper loops the ILECs use to provide voice service, rather than having

to lease separate loops from the ILECs at higher prices.

The ILECs had argued that in the residential broadband market they have to compete with cable companies that don't have to share lines, so the ruling should be removed to level the playing field. Business DSL connections from Covad and other providers won't be affected because these lines already rely on loops dedicated exclusively to DSL service and don't rely on line-sharing.

## The switching rub

In terms of switching, FCC Chairman Michael Powell had pushed for lifting the requirement for ILECs to make switch facilities available to competitors as an unbundled element (UNE). But the FCC majority overruled him, retaining the status quo, at least for the near term.

While competitive local exchange carriers (CLEC) that rely on UNE switching to deliver service won't lose that capability immediately, the FCC decision contains a

**“The nation will now embark on 51 major state proceedings to evaluate what elements will be unbundled and made available to CLECs.”**

**Michael Powell**  
Chairman, FCC



AP PHOTO/MATTHEW CAVANAUGH

sunset clause that would see it phased out over three years if a state finds that competition won't be hurt by doing so. The FCC will set the standards for determining whether or not phasing out UNE switching will hurt competition.

Coleen Boothby, a partner at law firm Levine, Blaszak, Block & Boothby in Washington, D.C., which specializes in negotiating telecom contracts for corporate clients, described the FCC decision as a "dark day for CLECs."

But Drew Walker, president and COO of ITC DeltaCom, a CLEC in Georgia, says the FCC decision is neither a total victory nor a total defeat for companies like his. One issue he says he's still not clear on is how the FCC will deal with new packetized services, such as voice over IP.

AT&T issued a statement calling the decision a "difficult compromise." AT&T, which resells UNE switching, says the decision will help preserve the existing UNE structure. But the carrier also says the FCC

See Ruling, page 61

# IBM targets users through partner network

■ BY ANN BEDNARZ

NEW ORLEANS — IBM is putting more weight behind two key objectives: delivering "on-demand" products and services so users can adopt more flexible, utility-like infrastructures; and developing products tailored for small and midsize businesses.

To bring its partners up to speed with this agenda, IBM last week unveiled a slew of products and services at its annual PartnerWorld conference.

IBM depends heavily on its 90,000 business partners — a prolific group responsible for producing 31% of Big Blue's annual revenue. By embedding, installing and customizing IBM wares, independent software vendors and resellers bring in customers IBM can't get to, because many are too small for IBM to reach through direct sales.

Partners are critical to taking e-business to the next phase, said Mike Borman, IBM's general manager of global business partners. Businesses need to be able to respond quickly when customer demand shifts or a potential competitor emerges, Borman said. The challenge for IBM and its partners is to help businesses integrate IT systems and processes internally as well as with customer and supplier systems.

"There's plenty of on-demand opportunity for all of us," Borman said. "New services opportunities for consultants and integrators, new application opportunities for software companies, and new hardware and middleware opportunities for resellers, solution providers and distributors — all of which will help make our customers more competitive, productive and cost-efficient."

IBM is investing \$100 million in on-demand resources for its business partners, Borman told attendees. The company announced new training resources; assessment tools for analyzing customers' on-demand requirements; sales tools such as customer presentations and references; and the availability of 26 on-demand product offerings for partners to sell, including IBM's Express line of infrastructure software for small and midsize businesses, its eServer BladeCenter family and Linux clustering gear.

On the small and midsize business front, Big Blue unveiled the IBM Small and Medium Business Advantage — a \$500 million campaign aimed at helping IBM partners penetrate the small and midsize (SMB) market.

"SMB is the fastest-growing customer seg-

ment in the industry, with no dominant market-share leader," Borman said.

Other announcements at PartnerWorld:

- Additions to IBM's Express line of infrastructure software, designed for small and midsize companies with between 100 and 1,000 employees. DB2 Express, which runs on Linux and Windows, features self-tuning and self-configuring characteristics to reduce database management complexity. IBM Tivoli Storage Resource Manager Express installs in as few as 15 minutes and is designed for deployment on single-processor desktops, the company said. Two Lotus Domino Express products tackle e-mail and collaborative applications.

- IBM Community Tools is Big Blue's new suite of peer-to-peer applications for connecting IBM eServer iSeries users with each other and with IBM business partners

via one-to-many instant messaging. IBM's goal is to make it easier to exchange technical information and resources. The suite includes a messaging client that combines IBM MQ Event Broker for broadcast messaging, IBM Lotus Sametime for enterprise instant messaging, and Web services running on WebSphere and DB2.

- IBM Solutions Grid

for Business Partners provides a grid-computing environment in which vendors can run their applications in a simulated distributed computing environment. Giving its partners access to IBM testing infrastructure will help vendors deliver grid products more quickly because they won't have to build test setups, IBM said.

- IBM announced that Nortel is building advanced LAN switches for IBM's eServer BladeCenter line. The Nortel switch modules will enable traffic management among the server blades and let users consolidate dedicated switches, routers and appliances that provide traffic management, IBM said.

- New storage products, including the TotalStorage FASi 900 midrange disk storage array; and TotalStorage Linear Tape-Open Ultrium 2 drive, designed for archiving and disaster recovery, which doubles the capacity and speed of previous models, according to IBM.

- IBM's software group unveiled "Web services on-demand" programs for developers, customers and business partners. The goal is to improve Web services skills and speed up Web services adoption in the financial services, insurance and manufacturing industries, IBM said. ■

## Partner prowess

IBM business partners contributed

**\$25 billion**  
to its \$81 billion 2002 revenue.



[ SPEED ]

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# Quantum



# Polycom bolsters video net wares

■ BY JASON MESERVE

PLEASANTON, CALIF. — After years of product acquisition and integration work, Polycom's goal of helping customers use video, audio and data conferencing on any network from just about any endpoint could finally be coming to fruition.

The company this week will roll out a variety of enhancements, from new appliance software to new videoconferencing endpoints, intended to ease customer management of conferencing resources, improve IP connections with lower bandwidth requirements, and simplify mixing of voice and video on a single call.

In 2001, Polycom acquired rival PictureTel and network equipment maker Accord Networks in an effort to provide a more rounded offering of voice, video and data collaboration products, although it's taken the better part of two years to get all the groups on the same page. The moves also helped set Polycom apart from competitors such as Tandberg and VCON, which offered only pieces of the puzzle, not the en-

tire picture, experts say.

For network executives, the key features of the announcement are in the enhanced software for Polycom's multipoint control units (MCU), which connect multiple sites and round them into a single call. Version 5.0 of the software for the company's current MGC-100 and MGC-50 MCUs, as well as a new MGC-25 for small offices, now support the soon-to-be-ratified H.264 video standard. H.264 delivers the same video quality at 384K bit/sec that previous codecs delivered at 768K bit/sec, says Mark Roberts, products sales director at Polycom. With this support users get the same TV-quality video at half the bandwidth cost.

Also, 5.0 lets the MGC line handle audio and video callers in the same physical conference, rather than stringing together an audio-only call with a video call, as is required today. The number of endpoints that can be connected to a physical call, without having to cascade into a second physical call, also has been increased.

"I can now do 32 sites in one video call without cascading to

## Conferencing everywhere

**Polycom slowly is combining the fruits of its PictureTel and Accord acquisitions into a set of products that combine the best of audio, video and data collaboration.**

### Strengths

- Can offer complete package from audio and video endpoints to network equipment with software to manage it all.
- Can offer variety of endpoint types, including set-top appliances PC-based systems and room-based executive systems.
- Supports proposed H.264 video standard, which helps cut in half the amount of bandwidth needed for a quality video call.

### Challenges

- While H.264 is good, it's not ratified as a standard yet, so there could be minor tweaks still to come.
- Stiffer competition from video endpoint maker Tandberg and Web conferencing services such as WebEx.
- As 3G wireless proliferates, the company will need to mix video capabilities of newer phones with traditional videoconferencing.

another call," says Guy Welty, manager of global media networks and collaborative services at specialty chemicals and material company W.R. Grace in Columbia, Md., which has been testing Version 5 for a few weeks. Previously, if 12 sites were in a conference they would have to be

cascaded in two separate calls. "This makes it easy on us, because we don't have to worry about multiple links, and it's easier to manage and set up. Anything you can do to tighten up mistakes is good for you," Welty says about the upgraded product.

See Polycom, page 60

# HIPAA-compliant back-up device on tap

■ BY DENI CONNOR

COLORADO SPRINGS — Backup appliance vendor Storserver is expected to announce this week one of the first storage devices that conforms to new government privacy rules and regulations for healthcare institutions and hospitals.

The HIPAA Conforming Storserver Backup Appliance, a combination of hardware, software and services, enables customers to comply with the new Health Insurance Portability and Accountability Act of 1996 guidelines, which go into effect Oct. 16.

Storserver partnered with a HIPAA consultant and training company, PDM Consulting, to develop the back-up appliance, software, training and associated StorserverPDM Services. The Storserver package, which is aimed at large companies, includes the back-up appliance, which consists of disk and tape drives, and software that lets it store data in such a way as to conform with HIPAA privacy, retrieval and security regulations. It also can contain optional consulting services to assist customers in implementing and meet-

## HIPAA deadlines

**Healthcare organizations have many deadlines to keep an eye on to become HIPAA-compliant.**

Deadline	Details
April 14, 2003	Privacy Act for large health plans.
April 16, 2003	Electronic Health Care Transactions and Code Sets — systems and software testing starts.
Oct. 16, 2003	Electronic Health Care Transactions and Code Sets — all entities that filed extensions and small health plans.
April 14, 2004	Privacy Act for small health plans.
July 30, 2004	Employer Identifier Standard for large health plans.
Aug. 1, 2005	Employer Identifier Standard for small health plans.

ing patient privacy and security guidelines, and HIPAA-specific training, documentation, back-up, archiving and disaster-recovery services.

Patient data is backed up initially to the Storserver disk as changes to data take place, ensuring that data can be restored completely if a failure occurs. That data is later backed up to tape drives contained in Storserver for archival purposes. When data is backed up, a unique ID is assigned to each piece of data, which lets all the information related to a patient be retrieved from disk or tape by his

name, account number or other identifier. Storserver uses Tivoli Storage Manager to back up, archive and retrieve data.

The Storserver back-up appliance meets HIPAA mandates for administrative simplification that relates to sending and receiving health information, providing privacy and security of patient data, and electronic signature standards.

The appliance attaches to the network via Gigabit Ethernet connections and to a storage-area network (SAN) via SCSI connections. It will back up data directed to it from SANs, network-attached storage devices or network file servers.

A variety of vendors have storage products designed for HIPAA. Among them are EMC with its Centera system, Xiotech with its SAN-builder for Healthcare bundle and Storage-Tek's Healthcare Enablement packages.

The HIPAA Conforming Storserver Backup Appliance starts at \$20,000 for two terabytes of disk capacity. Training employees on HIPAA starts at \$150 per person and consulting services costs \$2,500 per day.

Storserver: [www.storserver.com](http://www.storserver.com)

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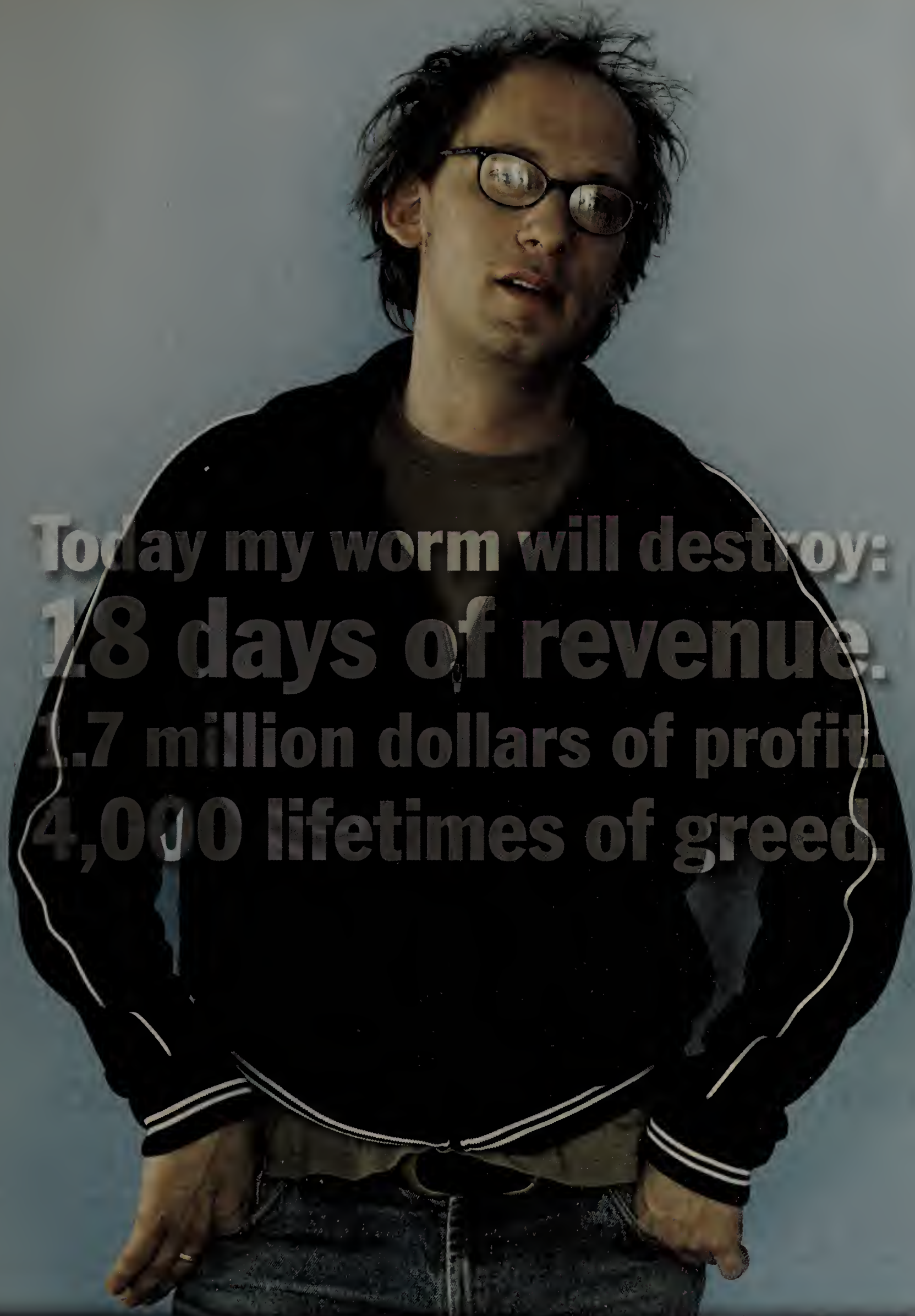
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# Q & A Cometa CEO reveals further details on start-up

*Cometa Networks, a start-up founded in December by a group including AT&T Wireless, IBM and Intel Capital, plans to build 20,000 802.11b (or Wi-Fi) public-access hotspots in the U.S. designed for 11 million laptop-lugging enterprise VPN users. CEO Larry Brilliant recently outlined the company's progress for Network World Senior Editor John Cox.*



## EXECUTIVE PROFILE: LARRY BRILLIANT, M.D.

**Title:**  
CEO of Cometa Networks

### Past accomplishments:

- Personal physician to the late Jerry Garcia of the Grateful Dead.
- Organizer of an effort to wipe out smallpox in India.
- Entrepreneur in an array of high-tech start-ups, including one that birthed, with Stewart Brand, The Well, one of the first and most influential online communities.

### So what's been happening since December?

We're looking for, and have signed, some resellers [carriers and service providers] and some real-estate owners [such as retail chains]. We'll announce these in a few weeks. Of the 25 or so service providers that offer DSL, cable, dial-up, Ethernet or cellular services, we want to partner with them all.

### You've got these giant companies behind you. What's taking so long?

Cometa is not a joint venture. It's a start-up. We just happen to be a start-up with wonderful partners. But we face all the challenges that any start-up faces: We have lots of resumé's coming in, but no one person devoted to going through all of them. We still have to find our own auditors, our own health insurance coverage and so on.

When we attend meetings with a carrier, they bring in 40 people and we send two. They say, 'Where are the rest of you?' God forbid if we have three meetings in one day.

### But you still expect to meet your goals, even though you haven't started actually building Wi-Fi hotspots?

We'll have 5,000 hotspots by the end of 2003 or the first quarter of 2004. That will be more hotspots in the U.S. from one vendor than anyone has now. Two years from now, we'll have 20,000 in the top 20 metropolitan statistical areas.

### Many companies are trying to get into the public-access Wi-Fi. How is Cometa different?

We spent nine months [before launching in December] with 40 full-time professionals from IBM, Intel and AT&T. We interviewed CIOs, CFOs and CEOs. We did original research on the corporate road warriors. Each [founding] partner had its own interests and assets. And our venture capitalists wanted a capital-lite

model that would offload the costs onto the manufacturing partners.

This led us to the wholesale model. We use our partners' resources to install and support the access points, to integrate with billing systems, to negotiate with real estate owners and so on. All the things like branding, billing, customer acquisition and customer service we leave to the carriers and service providers, which already are doing this for pennies. By leveraging the resources of all these partners, we created something that has real value to the enterprise executives and real staying power.

### Why does it have value for them?

The CIO will mandate that hotspot service be bulletproof, secure, available 24-7, and has client software that lets the enterprise's VPN work robustly from the hotspot locations. The CFO will say, 'Get me a billing system that shows me how many of our left-handed marketeers in Detroit suburbs are using Wi-Fi after 5 p.m.'

No [company] will trust the most important corporate processes to some kind of freenet Wi-Fi. It's just not going to happen.

### And this will work even though you're ignoring the consumer market?

For us, 802.11 is not a consumer play.

Our market initially is 11 million laptop-lugging, VPN-accessing dial-up users — corporate road warriors who travel during their day and desperately seek a remote or satellite office for their VPN [connection to the enterprise net]. Their VPN is their life.

These 11 million users are different from everyone else. They need an expanded definition of what an office is, so they can get onto their VPN whenever they go to a hotel conference room, a restaurant, an airport and so on.

### A Krispy Kreme donut shop as a corporate office for Ford?

If you have a connection back to the Internet with broadband tunneling and a place to sit down, you've got your office. If ultimately you [also] have voice over IP, you have phone and data. This is where the workforce is going. I've been in awe of IBM's capacity in this area. Something like 50% of the IBM workforce does not have an office per se. They work from home and from combined-use locations. It's the only way corporations can afford to compete. ■

# Microsoft acquisition targets data centers

■ BY JOHN FONTANA

REDMOND, WASH. — Microsoft last week acquired technology that it says not only will help Windows NT 4 users with migrations and server consolidations, but also is a step toward the company's goal of infiltrating corporate data centers.

Microsoft acquired three virtual-machine products, including the corresponding engineering teams and support organizations, from privately held Connectix. Terms of the deal were not disclosed.

A virtual machine lets multiple operating systems run on a single server or desktop.

The three products include software under development called Virtual Server, a native Windows-based server application that lets Windows operating systems,

Linux, Unix and OS/2 run concurrently in virtual machines. Microsoft plans to ship a beta version by midyear and a general release by year-end.

The other two products are Virtual PC for Windows, which lets various versions of Windows, and NetWare, IBM OS/2 and Linux, run on the same desktop; and Virtual PC for Mac, which lets Windows applications run on the Macintosh.

Microsoft says Virtual Server will let the company's NT 4 installed base take individual NT applications running on separate servers and consolidate them onto a single box running alongside Windows 2000 or Windows Server 2003.

IDC predicts that 75% of large corporations will consolidate portions of their servers this year, with the Win 2000/NT

market spending more than \$1.3 billion to do so.

"Users have said they don't want abrupt change where they are forced to migrate all at once, and they don't want to have multiple servers in use during migrations," says Dan Kusnetzky, program director for operating environments and serverware at IDC.

But he says the Connectix products might force Microsoft to do two things it doesn't want to do: support a product that runs Linux, and change its licensing model.

"Microsoft licensing is device-focused," he says. "In the virtual world, that licensing is not very equitable."

But those might be short-term issues, experts say, because Microsoft wants to

move Windows into the corporate data center and compete with Unix and mainframe system suppliers. To do that, it needs virtual machine, partitioning and workload management tools.

The company has a first-generation workload management tool slated to ship with Windows Server 2003 called Windows System Resource Manager.

"Virtual Server is not a magic bullet, but it's an important technology for their portfolio," says Gordon Haff, an analyst with Illuminata.

Haff says Microsoft eventually will bake the technology into the operating system.

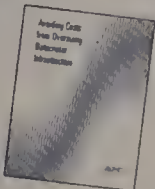
"All Unix virtualization is baked into the [operating system], and that is where Microsoft needs to take this product," he says. ■



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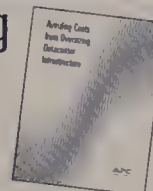
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**Navdip Bhachech**, Managing Consultant  
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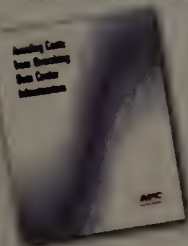
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## Short Takes

■ **HP** last week launched two new eight-processor Intel Xeon servers. The **ProLiant DL760** and **DL740** are rack-mountable: The DL760 is 7U high; the DL740 is 11U high. Each server can swap out failed memory without taking the server down. The DL760 is available starting at \$28,000; the DL740 will be available within 30 days for \$25,000. [www.hp.com](http://www.hp.com)

■ **IBM** extended the fault-tolerant features of its high-end systems into midrange storage arrays last week. The company announced the **TotalStorage Linear Tape-Open Ultrium 2** drive and the **TotalStorage FAST 900** storage array. The Total Storage Linear Tape-Open Ultrium 2 drive, designed for archiving and disaster recovery, has as much as double the capacity and speed of previous models. It operates at 35M byte/sec and contains 200G-byte storage cartridges. It consists of two models: the 3580, with one drive and one cartridge; and the 3584, which is scalable to as much as a petabyte of data. The TotalStorage FAST 900 has more than doubled the performance over previous models with the addition of new 2G bit/sec Fibre Channel controllers. IBM expects the TotalStorage FAST 900 to be available next month starting at \$75,000. The tape drives are shipping now starting at \$6,200; the 3584 starts at \$75,000. [www.ibm.com](http://www.ibm.com)

■ **Storability Software** last week announced a new version of its **Global Storage Manager** software. Version 3.5 includes enhanced management capabilities for provisioning across EMC, HP, Hitachi Data Systems and StorageTek arrays. It also automatically identifies improperly configured or unused storage capacity. The software now also includes policy-based management capability that lets customers set thresholds that can determine when additional capacity is needed. The software is available now and is priced by the number of devices and sites managed. [www.storability.com](http://www.storability.com)

## In Site: Lessons from Leading Users

# West Point learns wireless lessons

■ BY JOHN COX

**T**he U.S. Military Academy at West Point is deploying an 802.11a, 54M bit/sec wireless LAN as part of a new strategy to create a much more interactive classroom, where cadets are not simply passive listeners to an information broadcast by a teacher, but active participants. A high-speed wireless LAN is one element in creating this interactivity.

Traditionally, a professor would explain why it was so important for Col. Joshua Chamberlain to hold the Union Army's left flank at Little Round Top during the Civil War Battle of Gettysburg. But with the wireless classroom and a variety of specialized applications on laptops and servers, cadets can run a computerized simulation to see the consequences of failing to hold that critical hill.

Wireless LANs are making it cost-

effective for the academy to give each student this capability, says Col. Donald Welch, the academy's associate dean for information and education technology. "It would be a lot more expensive, and much less flexible, to make every classroom 'information rich' by wiring desktop computers [instead of using wireless LANs]," he says.

In the fall of 2002, the academy deployed a large-scale pilot network of 105 802.11a access points from SMC Networks, covering classrooms in the biggest academic building. Based on that experience, the IT group deployed the wireless net in two other buildings and is working now on the fourth. By August, when the Class of 2007 enters, there will be 369 802.11a access points, one in every classroom and lab. Every cadet will have a wireless laptop.

There were two interrelated reasons for choosing 802.11a, Welch says — higher bandwidth and throughput, and

eight nonoverlapping channels for clients, compared with three channels for 802.11b. When channels overlap, the interference causes throughput to plummet. To create 802.11b wireless "cells" with nonoverlapping channels on multiple floors in a building, we have to spread out the access points, Welch says. That means more users per access point, vying for a throughput of, typically, about 5M to 6M bit/sec.

"With 802.11a, we can put an access point in every classroom, and there's no more than 19 people sharing that higher bandwidth [throughput of roughly 17M to 21M bit/sec]," Welch says.

The academy's IT group evaluated four 802.11a vendors. "SMC is a low-end access point, without much in the way of bells and whistles," Welch says.

By contrast, another vendor offered more features, but at five times the cost. More importantly, all the products

**See West Point, page 20**

# XML device could reduce XML-related bottlenecks

■ BY ANN BEDNARZ

CAMBRIDGE, MASS. — DataPower Technology last week released an upgraded version of its XML appliance, aimed at helping companies reduce network bottlenecks associated with securing and transporting XML documents.

The XA35 XML Accelerator 2.0 offers compression and security handling features, in addition to its core XML parsing and processing capabilities. Specifically, the 1U-high rack-mountable network device can handle Secure Sockets Layer (SSL) acceleration, eliminating the need for users to maintain separate devices for handling XML encryption, DataPower says.

Its built-in compression capabilities can reduce the size of an XML document by as much as 90%, DataPower says.

Compression is key when it comes to XML, which has a reputation for being a bandwidth hog because of its text-based, self-describing format. XML documents can be from three to 20 times larger than

## XML express

**The new version of DataPower's XA35 XML Accelerator takes on XML processing chores.**

- Offers SSL acceleration to ease network bottlenecks.
- Handles XML compression to reduce document sizes by up to 90%.
- Includes Gigabit Ethernet support.



a comparable binary or alternate text file representation, according to research firm ZapThink. To combat XML's overhead, DataPower and competitors such as Forum Systems and Sarvega have devised appliances designed to offload XML processing from traditional servers, which

can get bogged down translating and routing XML documents.

Version 2.0 also features two 1G bit/sec ports, in place of four 10/100M bit/sec ports included in the first version.

DataPower added SSL and Gigabit Ethernet support so that companies could divert more processing chores to the XA35, which sits behind a firewall and in front of Web and application servers, freeing up server CPUs and reducing network bottlenecks, says Eugene Kuznetsov, president and CTO at DataPower.

"XML has tremendous business benefits — it cuts costs, makes it possible to be more flexible and support multiple devices, and allows easy integration with trading partners — but it has certain problems. Performance is one of them," he says.

One of the first companies to deploy DataPower's upgraded appliance is teleconferencing services provider Leader Technologies. The Columbus, Ohio, company offers low-rate teleconferencing

**See DataPower, page 20**



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## Software costs: There are no free kittens

or Mrs. Smith has a cat with a brand-new litter of kittens, which they want to GIVE AWAY! "They're free, mom," your beaming offspring says. Free, as in two or three trips to the vet, shots and pills, dishes, bowls and litter trays not to mention litter, food and drink. Then there's wear and tear on the furniture, carpet, curtains and any small mammals, birds, fish or reptiles that are already in residence.

Now I'm not saying that Novell is out to bankrupt you. I'm also not saying that paying a lot for something is better than getting it for free. My point is that you have to look beyond the unit cost into the total cost of ownership, which, although it's a very well-worn phrase is still applicable to technology-buying decisions.

Here's just one example (and, again, I'm not picking on Novell on purpose!). You decide that you need a new application that runs on top of a Structured Query Language database. You're already run-

ning NetWare 6, so you could add (for free) the Open Source MySQL database. You could also decide to purchase Microsoft's SQLServer (running on Windows 2000) or Oracle 9i running on Linux (the Linux, at least, is relatively free). Which one is the best deal? I can't tell you because it's very dependent on your own circumstances. However, the Novell answer has the lowest initial outlay while the Oracle on Linux is probably the most expensive to purchase in upfront costs. But what will support cost you? What about hardware cost? Do you need a database administrator, and what will that cost? Will the application run on the chosen platform without modification, or will you need to engage a consultant? Make sure you consider everything before you say yes to that kitten.

*Kearns, a former network administrator, is a freelance writer and consultant in*

*Silicon Valley. He can be reached at wired@vquill.com.*

## Tip of the Week

Everyone I spoke to had a wonderful time (and learned a lot) at **NetPro's Directory Experts Conference for eDirectory**. If you're involved in Active Directory management or programming, you need to consider the DEC for Active Directory coming in late April ([www.netpro.com/welcome/decadus](http://www.netpro.com/welcome/decadus)). If you go, and you meet Jenny, just tell her Dave said, "500 degrees."

## DataPower

continued from page 19

services that start at 9.5 cents per minute. Leader can afford to offer such low rates in part because it has users set up and manage their own conference calls via the Web — eliminating the need

CPU cycles it took to do this transform," Lamb says.

With the XA35, Leader has reduced response times from 4 seconds to about one-third of a second — a twelvefold increase in performance, he says.

The DataPower appliance also lets Leader increase scalability

**XML has tremendous business benefits — it cuts costs . . . and allows easy integration with trading partners — but it has certain problems. Performance is one of them.**

Eugene Kuznestov  
CTO, DataPower

for Leader to provide human staff for these tasks, says Jeff R. Lamb, CTO at Leader. Leader's Web-based conference-calling platform is based on XML.

As users set up or modify conference call settings, the application transforms generic XML documents, using an Extensible Style-sheet Language Transformations (XSLT) process, on the fly, into HTML. The HTML code then renders a client interface geared for devices such as desktops, mobile phones and PDAs, Lamb says.

The XA35 2.0 speeds processing of the XML-to-HTML transformations. Before Leader deployed the XA35, it was taking too much time and CPU power to render client interfaces, Lamb says.

Leader had tried multiple optimization techniques, including caching database objects and transactions. "The biggest bottleneck we had left was the actual

without investing in new servers. By offloading SSL encryption to the XA35, "our servers don't have to deal with any of that expensive CPU encryption and decryption stuff," Lamb says.

The net result is a fifteenfold increase in scalability, he says. "The only other way we could have solved the scalability problem was to have thrown a ton of hardware at it — a cost-prohibitive mountain of hardware to have been able to simultaneously support the number of users that we wanted," Lamb says.

The XA35 XML Accelerator 2.0 is available now. Pricing starts at \$35,000.



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## Site:

Lessons from Leading Users

## West Point

continued from page 19

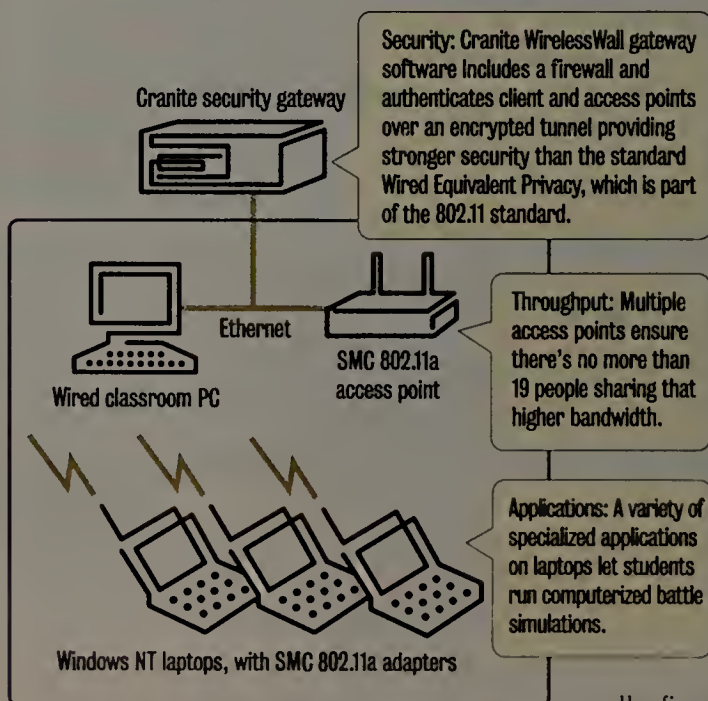
performed alike. "We found negligible differences in performance, in terms of throughput, [network] latency, flexibility and so on," Welch says.

Initially, Welch thought that the deployment issues would be things such as security, the unique qualities of radio frequency as the medium and so on. But all those proved "relatively easy," he says.

"The big problem was setting up the student

## West Point goes wireless

**Students at the U.S. Military Academy at West Point have classroom access to an 802.11a, 54M bit/sec wireless LAN. The LAN includes a variety of equipment that ensures throughput and security.**



**Typical classroom: about 25 by 25 feet  
Maximum number of students: 18**

machine with the wireless [network interface card], and the security software [from Granite Systems]," Welch says. "But then the student messes around with the machine and messes up the [wireless] configuration. We hadn't considered this."

A second lesson was figuring out how to keep the wireless net running, and handle any problems, with an IT support structure designed for a wired net. Limited by various organizational requirements, he pulled together staff from various groups and departments and created a kind of "virtual" support organization. All members of this team were given a basic training in wireless technology, and there is a clear structure and procedure for identifying problems and referring them to the team's wireless experts.

Security is based on Granite's WirelessWall gateway software, which runs on Linux servers.

WirelessWall incorporates a firewall and mutually authenticates client and access point over an encrypted tunnel. Granite scrambles all information on the network, including IP header information, with the Advanced Encryption System, which is far stronger than the standard Wired Equivalent Privacy that's part of the 802.11 standard.

For management, the IT group is using Cisco net management products, along with some utilities from SMC. The wireless team has just gotten its hands on two protocol sniffers, specifically designed for 802.11a wireless LANs.

The sniffers are critical to quickly troubleshoot any reported problems. In the future, the sniffers will let network administrators continually

fine-tune the network's performance. "My wireless guys are saying, 'We have got to have this,'" Welch says. ■



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# Special Focus

**SERVERS:** The future of high-end boxes.

## Partitioning bonanza: Unix servers

■ BY DENI CONNOR

**P**artitioning, a technology used in mainframe computers, is making its way into mid- and high-end Unix systems where corporate users employ it to isolate and protect applications from each other, combine processing power to run large applications or consolidate processing onto bigger machines.

In the next year, HP, IBM and Sun each will introduce more machines that can be divided into partitions for running different operating systems, applications and workloads. Lightweight Internet applications, such as Web serving, caching or load balancing, could be intermixed with heavier transaction-based applications such as Oracle on the same machine, saving IT the expense of buying two servers — one for each application.

In partitioning, a server's resources — CPU, memory, I/O, interconnects and buses — are divvied up according to the needs of the applications running on the server. Applications are protected from the actions of other applications that could cause failures, and optimally, they can shift allocated resources on the fly without taking the system down.

In an economy where money for new equipment is becoming scarce, companies are saving by consolidating applications onto fewer larger, more powerful machines. Partitioning helps because it lets users run separate workloads on the same machine.

"Partitions are primarily used for segregating programs, data safeguarding and data recovery. [Without partitioning,] if you have one big partition and any part of it fails, or some of the critical operating system data or configuration becomes corrupt, the whole system is down and recovery is more time-consuming and difficult," says Dan Gahlinger, senior network engineer and system administrator for Interlynx, an ISP in Hamilton, Ontario.

Gahlinger has a variety of Sun workstations and servers, including Sun's entry-level Enterprise 450 Server, that are partitioned in what Sun calls Dynamic System Domains, meaning resources can be reallocated to other applications.

Partitioning is used not only to combine operations that formerly ran on different servers, but also to run applications that have become too large to run on one processor.

"We'll be running PeopleSoft 8 with an Oracle database engine in four partitions — [the partitions] contain Web server, application server, database server and test and development," says David Meacham, director of IT for Delaware North Companies, a concessions and hospitality company in Buffalo, N.Y.

"We are replacing an HP V-Class Enterprise Server V2250 and an HP K360 server with [HP's] Superdome," Meacham says. "We looked at buying several machines, but because of the size of our database, we needed to have 24 processors for PeopleSoft alone. We didn't feel comfortable bringing in systems where capacity had already hit the ceiling." Superdome is HP's high-end PA-RISC based server.

Analysts say one promise of partitioning is its ability to adjust workloads across processors as they change.

"The more that workloads are Internet-driven and harder to predict, the more dynamic they need to be," says Jean Bozman, research vice president for IDC. "You

need to have resources that can be tapped and available, rather than going out and building tremendous data centers with unlimited spare capacity."

Partitioning evolved from IBM mainframe environments, where it was used to balance the workload of a server and protect applications from harm. Because it was too expensive to buy several mainframes, IBM settled on partitioning as an answer for dividing up the Big Iron so it could run many applications, each protected from the other. IBM's partitioning was by logical partition, commonly called LPAR. In 1996, Sun introduced physical partitioning with the Sun Enterprise 10K. On the low-end Intel server side, partitioning or software virtualization capability is offered in software from several vendors, including Connectix, Ensim, SW-Soft and VMware.

There are three types of partitioning: physical, logical and virtual.

In physical partitioning — the most common variety — the partitions are divided along hardware boundaries. Each partition might run a different version of the same operating system. Sun and HP servers deploy physical partitioning — the number of partitions relies on the

expected to launch a 32- and 64-way version of its EV7 processor-based AlphaServer, code-named Marvel. Later this year, the company also plans to introduce a new version of its HP9000, which uses the PA-8800 processor — this will support dual-core technology — doubling Superdome's processors to 128. Superdome presently supports 16 hardware partitions using nPars, and 64 uni-processor partitions with an HP partitioning method called virtual partitions.

In logical partitioning, supervisory software overlays the hardware so a machine can be divided along processors, memory, a bus or an I/O slot. IBM and Sun have software partitioning capability — the number of partitions each vendor allows in their servers varies from as few as 16 in IBM's p690 "Regatta" server to an unlimited quantity in Sun's newest Sun Fire v1280 or Sun Fire 12K or 15K servers. Servers that use software partitioning also have advantages and disadvantages, analysts say.

Because logical partitioning does not have the electrical isolation of hardware partitioning, it is not immune to failures.

### Partitioning play

**Server partitioning varies in its use and capability from systems that are fault-isolated to those that can run numerous lightweight applications.**

Type of partitioning	Advantages	Disadvantages	Examples
<b>Physical</b>	Total isolation of system resources; can run applications larger than processor size.	Limited partitioning capabilities.	Sun Fire E12K, HP AlphaServer GS320
<b>Logical</b>	More flexible than physical partitioning; increased number of partitions; can run more lightweight applications; can run applications larger than processor size.	Resources not isolated.	IBM eServer p690 and p670, HP Superdome vPars
<b>Virtual or software</b>	Most flexible; increased number of partitions; can run applications larger than processor size.	Resources not isolated; limited to Linux and Windows operating systems.	IBM zSeries Linux on Mainframe, VMware, SW-Soft, Connected, Ensim

hardware. Physical partitions have the advantage of allowing complete isolation of operations from operations running on other processors, thus ensuring their availability and uptime. Processors, I/O boards, memory and interconnects are not shared, allowing applications that are business-critical or for which there are security concerns.

"One of my clients is running a billing application on an HP AlphaServer GS160 with two partitions — each contains eight processors and 64G bytes of memory," says Gordon Dixon, a consultant with Cybertech Resources. The GS160 is a midrange 16-processor system, which runs Tru64 Unix and OpenVMS and can be partitioned into as many as four partitions, one for every four CPUs.

"Each partition runs the OpenVMS operating system and is handled as a completely separate system, such that there is not a single point of failure," Dixon says.

The disadvantage of physical partitioning, analysts say, is that machines cannot be divided into as many partitions as those that use logical partitioning, and users can't consolidate many lightweight applications on one machine.

HP will introduce a version of its SuperDome server midyear that would let different operating systems run in separate partitions. By year-end, the company is

In the first half of 2004, IBM will introduce a 64-processor p690, code-named Armada. Armada will use IBM's Power5 processor, which deploys a technology called simultaneous multithreading. In simultaneous multithreading, each processor can undertake the actions of two concurrent threads, with full access to system resources, thus making a 64-processor machine look as if it has 128 processors. IBM says with the next version of AIX, Version 5.3, due in the first half of 2004, that improved partitioning capability will let users run as many as 10 operating systems per processor.

HP also plans 128-processor servers using PA-RISC and Itanium processors late this year and next.

Virtual or software partitioning, in which processors arbitrarily divide physical resources, operating systems or time segments, applies the least to Unix machines. Users will deploy it primarily in x86-based servers or in IBM mainframes using Linux. Because it is software-based, complete fault isolation is impossible. Illuminata analyst Gordon Haff says that as hardware becomes more reliable and the need to isolate applications from each other decreases, vendors will focus on letting users partition their servers more finely. ■



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# Enterprise Applications

■ PORTALS ■ MESSAGING/GROUPWARE  
■ E-COMMERCE ■ SECURITY  
■ NETWORK MANAGEMENT ■ DIRECTORIES

## Short Takes

### ■ Software maker Divine

announced last week that after months of cost cutting, it will explore strategic alternatives — including filing for bankruptcy protection — to protect its operations. A one-time business incubator, Divine today sells a range of software, including CRM, content management and collaboration applications. The company was founded in 1999 by entrepreneur Andrew Filipowski, who today is chairman and CEO. The company says it has worked over the past several months to minimize operating expenses and various liabilities. However, its board of directors has determined that Divine must seek alternatives. The company reported a net loss of \$159.8 million for the nine months ended Sept. 30. Merger and acquisition adviser Broadview International will help Divine explore its options, which could include asset divestitures and Chapter 11 bankruptcy filing. Divine says it currently is involved in discussions to sell several of its businesses and assets.

■ **BEA Systems** has released an upgrade to its **JRockit Java virtual machine** for servers based on Intel processors. BEA acquired JRockit early last year from Sweden's Appeal Virtual Machines AB and has worked closely with Intel to improve the product for servers based on Intel chips. Most of BEA's customers run its WebLogic Java application server on Unix systems from Sun and HP, but sales on Intel-based systems represent the fastest-growing part of its business. The main enhancements in the new release of JRockit, Version 8.0, are in performance. BEA says it improved the profiling and debugging interfaces in JRockit to help customers write faster applications, and to find and fix performance bugs. Version 8.0 is available for download for 32-bit Windows and Linux systems. [www.bea.com](http://www.bea.com)

## Managing digital rights

10 things you need to know about controlling corporate content.

■ BY JASON MESERVE

Digital rights management is a hot topic in the entertainment business as record and movie companies try to figure out how to protect their content from piracy and mass distribution by way of file-sharing services such as Kazaa and Morpheus. But DRM does more than protect movies and music. It also can have a profound effect on the way corporate data is used and shared.

DRM is not necessarily a single product or service, but a means of extending corporate security to digital content that is easy to move around. The premise

behind DRM is relatively simple: Users are given rights to a piece of content based on certain conditions (such as they can view it once, for a set period of time, or can use it only on a particular machine or device).

**1. Data format.** Various types of data (documents, spreadsheets, rich media) need to be secured in corporations. "[Organizations] should take inventory of those formats and make sure the technology that's picked can cover all of them," says Paul Rettig, director of digital media development at IBM. "You don't want five or six dif-

ferent solutions to cover all the areas you need to protect."

When thinking about what product, vendor or service to use in a DRM implementation, Rettig says it's important that the ability to define rights is generic across all media types. With that said, there will always be some idiosyncrasies on how those rights are managed and implemented based on the delivery method and format. For instance, streaming media files could have a right that says whether they can be saved after they're streamed or not, where a document can be read-only or read-write-print.

See DRM, page 28

## Tacit brings together like-minded users

■ BY JOHN FONTANA

PALO ALTO — Tacit Knowledge Systems this week is unveiling a server designed to link users of different collaboration platforms throughout a corporation.

The purpose of the company's forthcoming ActiveNet server is to bring together users with the same interests who may not be aware of each other. Often organizations have a mishmash of collaboration tools from e-mail to Web-based team rooms to peer-to-peer clients. Users collaborating via one tool on a subject might not know that others are collaborating on the same topic using a different tool. The Tacit software lets companies link those pieces.

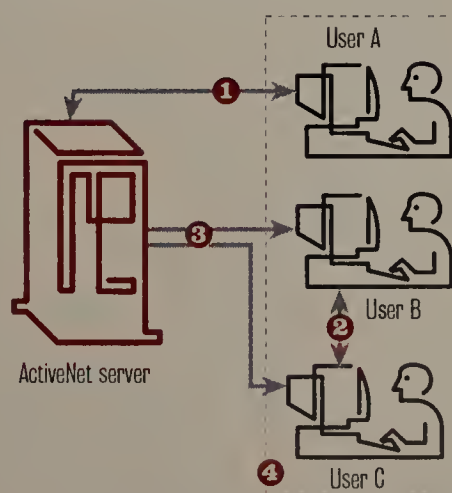
ActiveNet, using a set of connectors to collaboration platforms ranging from Lotus Notes and Microsoft Exchange to Open Text, Documentum and Groove Networks, can recognize those parallel conversations and link the participants.

"Tacit is trying to take collaboration to the next level," says Matt Cain, an analyst with Meta Group. "It helps you find the right experts . . . and start a dialogue. Companies need to link content and collaboration and Tacit helps you find content and expertise."

The server is not a central repository of data, but instead is a repository of user profiles automatically created by examining the documents and electronic communications associated with a user. Technologies such as Lotus Discovery Server and Microsoft's SharePoint Portal Server use similar technologies within their products.

### Getting together

**Tacit Knowledge Systems this week unveiled its ActiveNet server, which can help users locate each other even if they are using different collaboration software.**



- 1 User A's profile, which the ActiveNet server creates automatically, lists his interest in and expertise with Linux.
- 2 Users B and C, collaborating through peer-to-peer clients, discuss forming a committee to study Linux use in corporations. In the background, ActiveNet logs key words from the conversation.
- 3 ActiveNet recognizes User A's interest in Linux and sends an e-mail request to Users B and C asking if it can share conversation with User A.
- 4 Users A, B and C create a collaborative environment using any collaboration tool common to their desktops, including e-mail, team room software or peer-to-peer clients.

Using a feature called hotlist, ActiveNet finds information matching topics listed in a user's profile, and the system will ask the creators of that information if they want to share the data. If they do, ActiveNet will send a message to the user alerting him to the data and its creators. From there, the user and the creators of the data can pick any tool they choose to collaborate further.

The system also has a more manual feature used to search for people with knowledge on topics as listed in their profiles.

"The use of collaboration tools is not very coordinated at large companies," says David Gilmour, CEO of Tacit. "People have plenty of tools focused on how to collaborate, but ActiveNet is focused on who, when and why."

ActiveNet is a Java-based application that runs on Windows 2000 and provides management controls for searching and hotlists. ActiveNet is built on Tacit's ESP 5.0 collaboration platform, which provides search and profiling engines, and the coordination services that link users. It must be run with a Java 2 Platform Enterprise Edition server, which is used to present a Web-based interface, and Microsoft's SQL Server 2000 or Oracle 9i database.

The software also features a Web-based administrative console for setting administrative passwords and assigning roles.

ActiveNet will be priced per user profile and is expected to ship in April. A base installation ranging from 500 to 1,000 users is priced between \$60,000 and \$80,000.

Tacit: [www.tacit.com](http://www.tacit.com)



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## Is it tea time again?

to collect taxes on goods and services sold to people living in the state. This came about because the complexity of having to deal with 7,500 or so separate tax jurisdictions was too much to impose on the sellers.

Second, a series of federal laws prohibited anyone from adding new taxes for Internet services.

The current iteration of the federal law will expire this November unless it gets extended again, but it does not block taxes on goods and services purchased over the Internet. Those taxes still are blocked by the Supreme Court's ruling, which could be dealt with by the passage of a new federal law that say it is OK to tax in spite of the complexity or by simplifying the tax chaos. Many states are busily doing the latter.

A group of 31 states have been participating in the "Streamlined Sales Tax Project" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 4433), which recently adopted model tax

rules that, if adopted by enough state legislatures, could pass the Supreme Court's simplification threshold. The adoption of these simplified rules are far from a done deal because they override some county, city or local taxes, and these folk likely will object. And things might not stay "simple" for all that long because the model rules let states add new taxes later, something I seriously doubt they will refrain from doing.

I would expect that any taxes on Internet services quickly would become the general revenue-gathering device that taxes on telephone services have become. I also expect that those imposing such taxes would try to distinguish between different Internet services such as voice over IP, and in some cases be urged by incumbent telephone companies to kill competing technology (ostensibly for the sake of fairness).

As you might expect, the prospect of taxes on the Internet has brought out

quite a range of opinions, from brick-and-mortar stores that see a need to even the playing field, to the folks who think all taxes are unconstitutional (one of whom wrote late last year that taxing out-of-state companies would be taxation without representation). I seem to recall that phrase from somewhere in Boston's past.

It will be interesting to see what this tax-cutting administration will do if a bunch of states go through the simplification process and then demand to be able to collect some of the \$1.5 billion to \$50 billion (depending on who you ask) of "lost" taxes next year.

Disclaimer: I expect the Harvard Business and Government schools have different opinions on taxes of all kinds but I did not ask them — the above musing is mine.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@sobco.com](mailto:sob@sobco.com).*

### DRM

continued from page 25

**2. Puzzle pieces.** Any DRM system put in place needs to be integrated with the existing enterprise infrastructure, including file management systems, databases, e-mail and Web servers.

"You're going to need some sort of database if you're going to be managing licenses and accounts. And if you're going to issue passwords via e-mail, you'll need an e-mail server to send users something," says Ezra Davidson, co-founder and vice president of business development at SyncCast, a content delivery and DRM service provider. "Think about how you're going to issue licenses and what type of server and complementary technology within your enterprise you may need. It's like if you buy a new car, you still need the gas to run it."

**3. Support the user.** Rettig says that like any type of security infrastructure, you need the right support to manage problems such as lost passwords or transitioning workers. When DRM locks a piece of content to a specific PC or person, what happens when a user gets a new PC or the worker takes a new position? The license needs to be moved to the machine or employee taking over the job task.

At Jane's Information Group, a Alexandria, Va., company that publishes titles such as "Jane's Fighting Ships," offers access to its online library on an individual and corporate basis. Jane's would like to be able to offer a single login to an individual that also contains the rights that person's employer might have paid for as well, says Lisa Koenigsberg, eServices manager at Jane's.

"Part of the issue is someone has to manage it," Koenigsberg says. "If you leave

the company, Jane's doesn't know you've left, and you could still retain the company's [access] rights even though you're not there."

**4. Protect your keys.** If using a third party to serve and authenticate licenses, it's important to keep local copies of the user data in case something happens to the provider. "In the event the service provider goes away, you need to have a transition period to get access to data they have been collecting," Davidson says. "Make sure to get data on cycle basis. If something happens, you can take your data to a new provider and quickly start issuing keys again."

**5. Partners outside the firewall.** "Our biggest challenge is handling the people who are not employees of our company," says Rebecca Burr, director of market analysis at chip maker Xilinx in San Jose. "We're not as aware of what's happening [securitywise] at our partners."

Xilinx is in the process of rolling out Authentica's PageRecall DRM product to help distribute the company's price books (the Holy Grail of the company's operations) using the Secure PDF format. DRM helps ensure the books are used for their intended purpose and not easily distributed to competitors. For assets distributed outside the firewall, the protected content will have to be authenticated more frequently than it would for someone using the price book internally.

**6. Remote users.** For traveling workers not connected to a network, there should be a policy implemented with some requirement to "phone home" to check the permissions that let users work offline on the local desktop. "One can go on a trip off

network and take a key," says Victor DeMarines, director of marketing at Authentica. "First, you take a snapshot of the user's system that's accessing the document or content, then download that content to the computer and bind it to the machine so that the DRM policy remains in force."

**7. Mobile devices.** If your corporation deals with distributing content to mobile devices such as cell phones, PDAs or BlackBerrys, you need to be able to recognize the capabilities of the device to ensure the restrictions that DRM is placing on content, Rettig says. For instance, if it's a device with no date/time feature, then it cannot track time-based expiration restrictions. If the device cannot help support the restrictions, the content should not be able to reside on it.

**8. Don't get in the way.** On the delivery and management end it's important to integrate with existing systems and workflows, and the same can be said for the way end users consume data. Jane's provides access to its libraries via a standard Web browser, making it easy to cut-and-paste and print-and-carry the data and use it for source material in a research project. "Our customers use us as a research tool," Koenigsberg says. "Look at the media, how many times over the last year have you seen CNN quote a piece of text from Jane's? We give them the ability to retrieve the information themselves."

Xilinx's Secure PDF files are tagged and can "report" back whenever they're opened, forwarded or transferred, so the company always knows who is doing what. Also, pages that are printed have a unique watermark based on the recipient's identity, so if they are distributed, they are easily tracked to the original recipient, Burr says.

**9. Change on the fly.** One benefit of DRM is that it can let content owners change the rights and conditions of a given license on the fly. Burr says when a new price book becomes available, the DRM technology being rolled out will be able to revoke the keys to old price books, rendering them useless. This keeps outdated material from accidentally being used or maliciously distributed, says Jonathan Lewin, founder and CTO of eMeta, a software company that makes content distribution tools.

**10. Standards on the horizon.** DRM products and services now are typically proprietary offerings that do not interoperate well beyond the content they control. For instance, the DRM technology embedded in Microsoft's Windows Media Technology supports only the Windows Media Format and not competing formats such as Real and Quicktime. But a number of groups are looking to standardize how DRM rights are defined and how different pieces of the puzzle can operate.

One specification that could gain considerable momentum is coming out of ISO's MPEG-21 committee. MPEG-21 is a framework for delivering and using multimedia services across a variety of devices. One of the major underpinnings of the specification is the Rights Expression Language, based on the Extensible Rights Markup Language developed by ContentGuard, which will provide a standard way of describing rights and methods of any object.

"Because MPEG deals with rich media, its [DRM piece] will be able to handle all media types," says Bruce Gitlin, vice president of business development at ContentGuard, a Xerox spinoff that licenses DRM patents and tools. ■





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# Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGE AND LOCAL CARRIERS  
■ WIRELESS ■ REGULATORY AFFAIRS

## Equant launches DSL for IP VPN users

■ BY DENISE PAPPALARDO

International carrier Equant this week will announce a broadband access option that it says could save its managed IP VPN customers up to 30% per month vs. using dedicated T-1 lines.

Equant also says its DSL Access option — initially available in Australia, Canada, Hong Kong, Italy, Singapore, the U.K. and the U.S. — will eliminate for customers the hassle of dealing with multiple DSL providers.

"While DSL is still not ubiquitously available, this is a good move on [Equant's] part," says Brownlee Thomas, an analyst at Giga Information Group. "This service addresses bandwidth bottlenecks, which are always in the local loop, for small-office users."



Bill Strickland, national technology manager for IS LAN/WAN services at Toyota, says DSL access is lacking.

Equant is targeting customers who want more bandwidth than they get from dial-up but find dedicated T-1 lines too expensive. While it will vary from country to country, the DSL option will cost customers 20% to 30% less per month than dedicated T-1 access but provide the same transmission speed, says Gopi Gopinath, senior vice president for data services at Equant.

In the U.S., Equant is teaming with Covad Communications and SBC to provision DSL to its IP VPN customers. Overseas, Equant is working with different service providers in each country.

Equant, which offers its IP VPN service in 140 countries, plans to extend DSL access to France and Germany by mid-year and to make it available in more countries in the second half of the year.

"It's a very tricky proposition to offer DSL support across multiple regions," says Camille Mendler, research director at The Yankee Group. It is difficult to support consistent service levels and performance guarantees when dealing with multiple local providers, she says.

"This is a headache that many businesses would be interested in handing over to Equant," she adds.

One headache Equant still is trying to cure, though, is a lack of performance guarantees.

"The fact is we are not able to get [service-level agreements] from the [DSL] service providers," Gopinath says. "Until we have a reasonable number of providers with SLAs, we cannot offer [performance guarantees] to our customers."

Toyota, which links its dealerships via a 1,000-site VPN, says it would like to use DSL at some locations, but the lack of performance guarantees prevents it from doing so.

"We considered DSL to reduce costs,

but were unable to get meaningful SLAs for network availability or [mean time to repair] on DSL at the time we rolled out the network," says Bill Strickland, national technology manager for IS LAN/WAN services.

For now, Strickland uses fractional and full T-1s at all his sites.

Although Equant doesn't offer SLAs, customers can use its WebVision customer service portal to view traffic utilization statistics on an hourly, daily, weekly and monthly basis.

Equant is not the first carrier to offer DSL

access for its IP VPN users, but it appears to be the first to support DSL to VPN services in multiple countries. WorldCom announced a similar option in September, although it is available in only 55 U.S. markets. AT&T also offers DSL access to its IP and IP Enabled Frame Relay service, but only in the U.S. today.

Equant is working on additional remote-access service options for its IP VPN customers, Gopinath says. The carrier is planning a Wi-Fi service trial that could lead to 802.11b service support by year-end, he says. ■

## AT&T Wireless to lend Palm users a hand

■ BY STEPHEN LAWSON

MILPITAS, CALIF. — AT&T Wireless plans to become the first carrier to offer a high-speed, mobile service in the U.S. to users of Palm's Tungsten W PDA, as soon as the device becomes certified.

Customers of the device can expect data transmission speeds of up to 40M bit/sec and service availability in 99 of the 100 largest metropolitan areas in the U.S., according to the carrier. Originally scheduled for this month, the release dates of Palm's device and AT&T Wireless' service have been pushed back because of delays in certifying the Tungsten W by the PCS Type Certification Review Board. Palm says new launch dates will be announced soon.

Tungsten W, which was announced in October, is aimed at the corporate market. The device includes an integrated keyboard, e-mail and short message service support. The device also includes Palm calendar, contact and to-do list software, Acrobat Reader, a Web browser and Documents To Go Professional Edition software.

Although the Tungsten W supports voice, it primarily is designed for data communications. The device requires hardware attachments, such as a wired headset, for use as a phone.

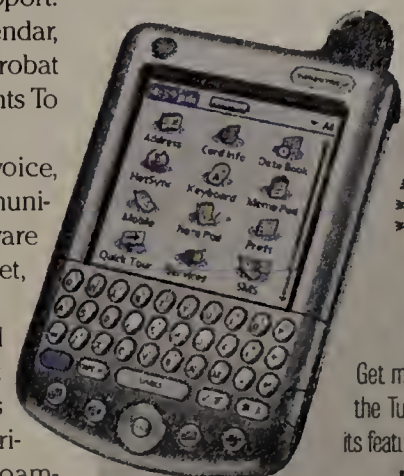
The device supports multiple GSM bands including 900MHz, 1800MHz and 1900MHz that will let customers traverse networks of international carriers with which AT&T Wireless has roaming agreements.

This is not the first combination PDA and phone that AT&T Wireless has supported. The carrier also supports the Siemens SX56 device and Research In Motion's BlackBerry with phone.

AT&T Wireless will charge Tungsten W users by the amount of data they send and receive, not by the amount of time they spend online. Plans will range from 8M bytes per month for \$20 to 100M bytes per month for \$100. Voice plans will be sold separately, but customers will receive just one bill for both services. The 8M-byte plan requires the purchase of a voice plan.

Tungsten W devices will have a suggested retail price of \$550.

Lawson is a correspondent with the IDG News Service's San Francisco bureau. Network World Senior Editor Denise Pappalardo also contributed to this story.



More online!

Get more background on the Tungsten W, including its features and applications.

DocFinder: 4434

### Short Takes

■ **Internet2**, a group of 200 universities working on next-generation Internet technologies, announced last week that its **Abilene** network reached a new milestone: its first 10G bit/sec transcontinental network segment. The group is in the process of upgrading its U.S. network to 10G bit/sec. The network also will support native IPv6 and multicasting applications. Similar to the Internet before it went commercial, Abilene is an advanced network for academia to test sophisticated and complex applications such as remote control of telescopes and immersive virtual reality.

■ **Qwest's** financial adventures continue to keep industry watchers guessing. The carrier has revealed it will restate \$2.2 billion in revenue for fiscal 2000 and 2001. The carrier's 2001 revenue will be adjusted to \$18.4 billion from \$19.7 billion and its 2000 revenue to \$15.7 billion from \$16.6 billion. Qwest officials cited billing errors and premature revenue recognition as the primary causes of the restatements.



## EYE ON THE CARRIERS

Johna Till Johnson



## Cherchez l'application

One of the questions I get regularly is, "How can I improve my network capacity planning and forecasting abilities?"

Here are some thoughts to get started:

First, make sure you've got solid techni-

cal processes for measuring network performance and bandwidth consumption. Specifically, you should look at end-to-end latency across the network. By end to end I mean system to system—not just from the WAN interfaces on the routers.

There are a host of fancy tools to do this. If you can't afford them, at least write a short script to run pings or traceroutes on a regular basis.

You also should be tracking bandwidth utilization. Look at average and peak utilizations, and track both over time. For example, your average utilization might be growing at 8% month over month, while your peak utilization grows at 15%. (Hint: You'll probably need a network upgrade sooner than expected). Also look at average utilization as a percentage of peak utilization, and note whether that figure changes over time.

You should look at the sampling rate at least hourly (every 15 minutes is better), and you should review historical trending at least quarterly.

OK, let's say you're doing all that. Guess what? That's only half the story. Knowing what's going on is table stakes for playing the game. But to win, you need to understand why it's happening. Do this in two steps.

**Step 1:** Make sure you understand which network resources are being consumed by which applications and how that changes over time. Is HTTP growing faster than e-mail, for instance?

**Step 2:** Time to find out about macro-events that are driving your organization's use of the network. For example, is your organization engaged in data center consolidation? If so, you'll probably need to think about increasing the bandwidth to the remaining data centers—and providing redundancy and reliability alternatives. Time to research your local metropolitan-area providers.

What about a Web services or IP telephony rollout? You'll need to check out latency requirements, and you might want to invest in compression technology (particularly at remote branch offices).

How will you know about this? That's the tricky part. You'll need to leave your team to their scopes and sniffers, and begin asking questions. Start with your boss, but don't stop there. Talk with executives in other departments (sales, accounting and customer service).

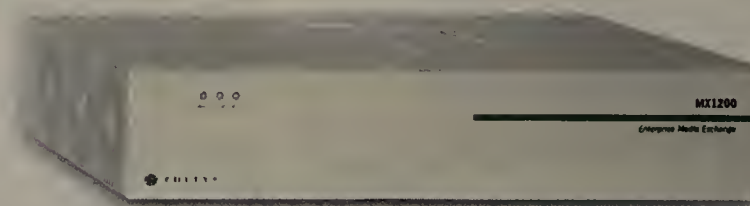
And don't limit your conversations to the senior folks. Midlevel staffers often have a lot of great information—and more time to talk. That clerk in accounting might provide a valuable heads-up about the financial package slated for rollout next year. The visiting salesman might clue you into the new office the company's considering in Latin America. And so on.

Of course, you'll need to validate this information before acting on it, but as they say, knowledge is power. Knowing that these options are potentially in the works can help you make better decisions today.

*Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.*

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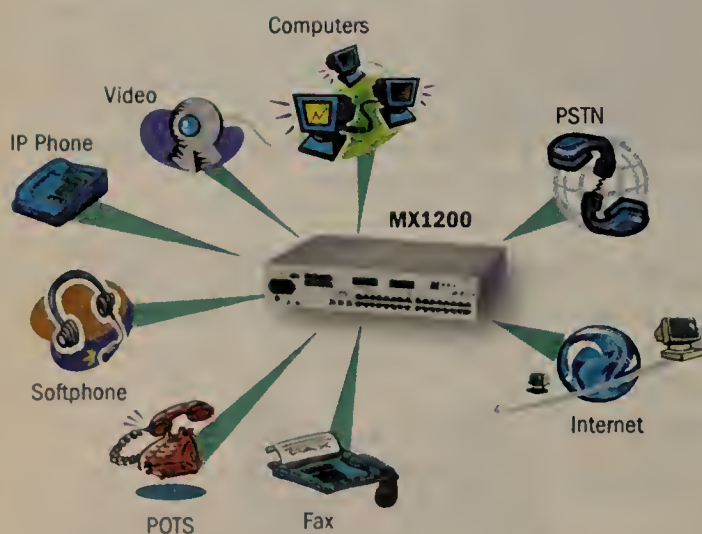
Introducing the MX1200, the industry's most innovative and highly integrated enterprise communications system. It finally makes VoIP a viable, mainstream solution.

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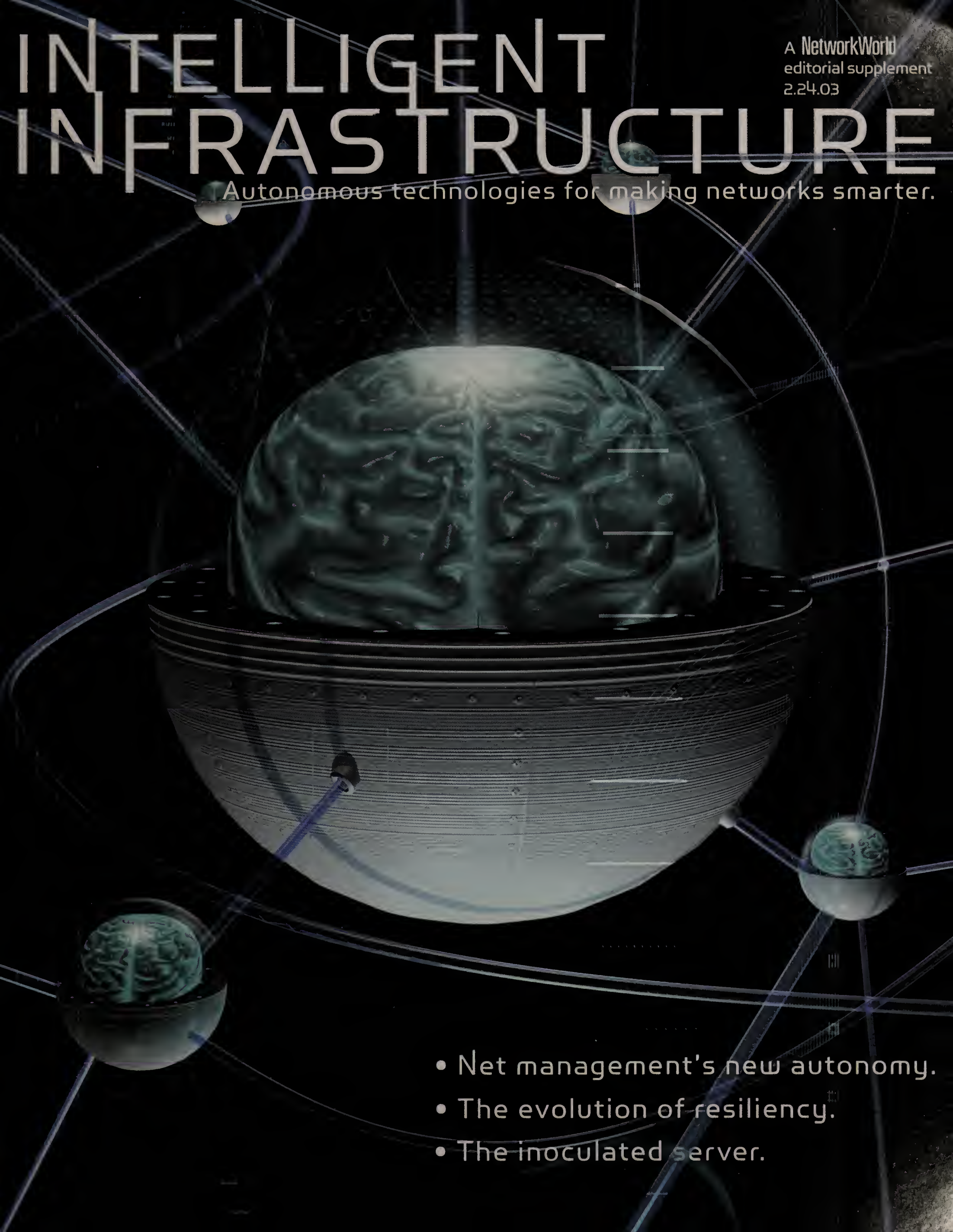
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# INTELLIGENT INFRASTRUCTURE

A NetworkWorld  
editorial supplement  
2.24.03

Autonomous technologies for making networks smarter.

- Net management's new autonomy.
- The evolution of resiliency.
- The inoculated server.



## Powering Up; Keeping Costs Down

"It's simple: If our people can't access the network, our customers go dark," says Chuck Benton, network analyst at Sierra Pacific Resources, a private utility that provides electricity to 843,000 customers throughout Nevada and northeastern California.



Fortunately, Sierra Pacific has a robust enterprise network that not only ensures the highest availability, but supports new business-enhancing applications—such as videoconferencing—to improve productivity and streamline costs.

### The Bottom Line: More than \$277,000 in yearly savings.

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## Security Concerns? Harness Built-In Enterprise Switch Features

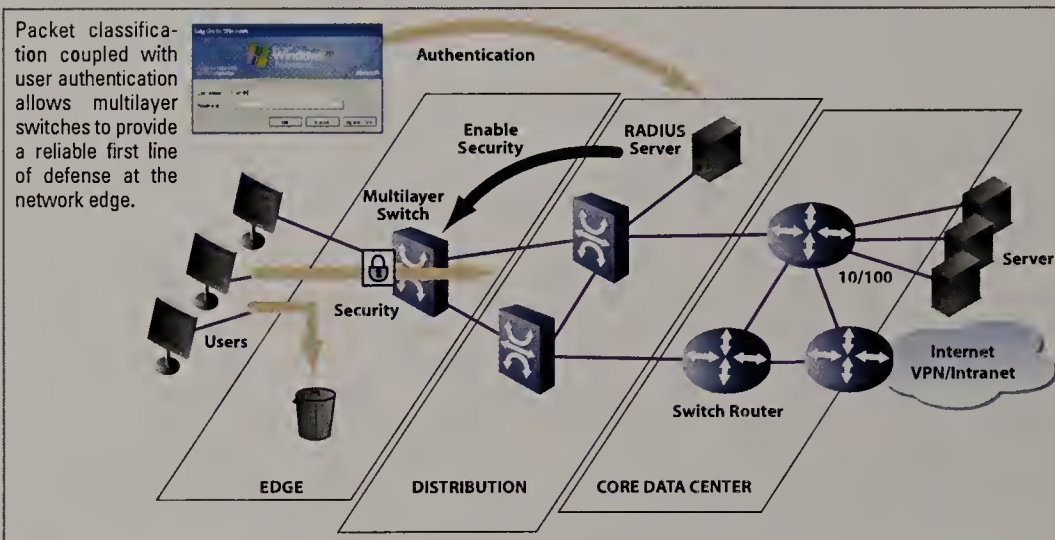
While the first automobile seat belts were invented 100 years ago, it wasn't until the 1980s that they were used with great frequency. Similarly, the enterprise network has provided a level of built-in security many organizations may have overlooked. But because the network is now an integral part of the business—with much more at stake—companies are now looking to beef up their security any way they can.

### The Evolution of a More Secure Switch

Enterprise switching technology has evolved over the last several years to include security features that are implemented with "just a click." **Multilayer packet classification**, sometimes referred to as Layer 2+, enables a switch to take action based on criteria other than a PC's address (Layer 2) or the next router hop (Layer 3). This means a switch can switch, prioritize, limit, or block packets based on a number of factors, including the type of application, protocol, Quality of Service (QoS), and even the user.

However, in select multilayer switches, built-in packet classification provides for additional security services:

- **Deny Spoofing Service** allows the switch to enforce a set of rules that prevents a user from acting as a valid administrative service—for example, attempting to resolve DNS queries as a DNS Server.



- **Deny Unsupported Protocol Access Service** allows the switch to deny all "unsupported" protocols, such as routing protocols (RIP, OSPF, etc.) originating from a user, or older protocols such as IPX and AppleTalk.
- **Intrusion Prevention Service** allows the switch to deny traffic containing well-known Layer 4 ports associated with attacks

on network resources. This helps safeguard the entire network by blocking known attacks, such as common port scans.

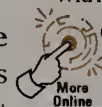
- **Limit Exposure to Denial of Service (DoS) Attacks Service** is a set of rules that allows the switch to deny or limit the use of protocols known to be DoS attacks, such as limiting the bandwidth allocated to a user for ICMP (ping).

- **Protocol Priority Access Control Service** lowers the overall priority of less important network traffic. By lowering the Class of Service given to this traffic, the administrator limits the impact of the resource-intensive application, but the user community can still take advantage of the access they have come to expect.

### What About Authentication?

To extend security even further, more advanced multilayer switches support a variety of standards-based **802.1X user authentication** mechanisms that identify each user.

To learn more about this critical security feature and others that can be deployed easily with a click—much like a seat belt—go to [enterasys.com/nw/security-concerns2](http://enterasys.com/nw/security-concerns2)



## The Matrix E1: The Right Switch at the Right Price

The Matrix E1 Multilayer Workgroup Switch and Gigabit Workgroup Switch from Enterasys Networks provide industry-standard switching and routing, enhanced with advanced packet classification and Quality of Service (QoS) features.

Compare the Matrix E1 Series with Cisco's Catalyst 3550 Series for capacity, performance, and flexibility:

- **Capacity**—The Matrix E1 has twice the number of 10/100 ports as the Catalyst 3550-48.
- **Performance**—The Matrix E1's packet forwarding rate is 60% higher than the Catalyst 3550-48.

- **Flexibility**—The modular Matrix E1 supports a wider range of technologies (10/100, 10/100/1000, 100FX, 1 Gig), while the Catalyst 3550-48 is a fixed-configuration switch supporting only 10/100 and 1 Gig.

The Matrix E1 delivers all of these advantages at a more competitive price.

With multilayer packet classification, the Matrix E1 also supports sophisticated security capabilities (see above). When combined with Enterasys' NetSight Atlas management platform, the Matrix E1 provides the advantage of highly secure network access for both users and administrators.

Other important security-related features include support for 802.1X Authentication, MAC Address Authentication, MAC Port Locking, Access Control Lists (ACL), Extended Access Control Lists (ACL) and policy-based services (anti-spoofing, unsupported protocol denial, intrusion prevention, and DoS Attacks limits).

The Matrix E1 is part of a full line of high-performance, multilayer switches from Enterasys Networks. To learn more about this highly secure, competitively priced switch, go to [enterasys.com/nw/right-switch2](http://enterasys.com/nw/right-switch2)



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# NET MANAGEMENT'S NEW AUTONOMY

Automation has been a long-standing failure in network management products, but the latest generation of such tools might work as advertised.

BY DENISE DUBIE

**A**mid some of the worst economic times he's seen in his 25-plus years in networking, Clyde Wilson needed to upgrade his network to better support Markel's business.

"My budget is getting crunched, I'm not allowed to hire as many people and I need to do more with what I have today," says the manager of technical services at the specialty insurance broker in Richmond, Va. "It's just a sign of the times."

To make his network more efficient without unloading a lot of cash, Wilson added software from HP, Heroix and others to automate management tasks across the network, which supports 12 locations.

The need to do more with less turned Wilson into an early adopter of today's automated management tools. But he is not alone in his need for automation. Network executives across the board face similar concerns: reduced head count; tight or no budget dollars; and growing demand to support ever more complex business services.

Automation has long promised enterprise network companies a combination of increased efficiencies and cost savings, but the technology never really delivered on its promise. In 2002, IBM, HP, Sun and Cisco, along with some savvy start-ups, sought to eradicate automation's bad name. Software and hardware vendors launched campaigns detailing product road maps — such as IBM with its autonomic computing and HP with its adaptive management — they say will satisfy enterprise needs for cost-cutting, network-optimizing tools.

"More than three-fourths of the average enterprise IT budget goes into keeping the lights on and maintaining the status quo," says Zeus Kerravala, a vice president with

The Yankee Group. With a meager 20% to 25% of their budget available for new and in some cases necessary IT projects, enterprise network managers such as Wilson decided in late 2001 and throughout 2002 to revisit automation and take a look at the slew of new tools.

## In the beginning

Despite what vendors might say, the change they want to drive into every network IT shop this year isn't a radical, new idea, but one that traces its origins back to the mainframe. Software giant

Computer Associates introduced the first commercial job-scheduling product, CA-Scheduler, for mainframe environments in 1981.

Automated products use process rules and product-management information written into software applications to, say, monitor the CPU or memory utilization on a server at a scheduled time — without human intervention. For automation products to act on behalf of a network administrator, the knowledge of the network hardware and software applications needs to be built into the tools. Product developers write "if A happens, then do B" scenarios into the tools, and when a threshold is missed or a rule broken, the automation feature launches an action, such as paging a network operator or rebooting a server. But because of the dynamic nature of networks, early automation products quickly failed.

"Automation in distributed management has a fairly checkered past — lots of overpromising and underdelivering," says Jasmine Noel, principal analyst at JNoel Associates.

Successful automation requires network configuration parameters included in the software to change as the network changes, and immature products could not deliver that capability. The variety and sheer volume of network devices, events and alarms also overwhelmed early tools designed to automate simple processes. Hence the young technology disappointed users with lengthy deployment cycles, and constant update and maintenance needs.

"But like everything else, the ability to automate management is improving," Noel says. She says more vendors, such as Magnum Technologies, Micromuse and Smarts, learned to write intelligence into their tools to help automate network discovery, data aggregation and event correlation.

## Leaders of the pack

IBM is leading the charge toward intelligent network management tools and automation software. Big Blue became the front-runner in the automation revolution in April 2001 when it announced its eLiza initiative, which rolled into the broader autonomic computing initiative announced in October 2002.

While IBM works to integrate self-healing, self-managing, self-provisioning and self-protecting capabilities across its hardware group and four software brands (potentially five counting the \$2.1 billion acquisition of Rational Software at the end of 2002), its Tivoli division already delivers several of the promises — on a limited basis. Tivoli, the network and systems management (NSM) software arm of IBM, today delivers network, configuration, service-level and security management software, which includes self-managing and self-protecting features. Steve Wojtowecz, director of strategy for IBM Tivoli, says today's automation efforts face the hurdles of user hesitance and vendor integration across heterogeneous environments. While Tivoli, with other vendors, must win users' trust in automated offerings, software and hardware makers also must improve integration among their tools, either through standards work or partnerships, Wojtowecz says.

"It would be ideal to manage and automate cross-vendor technologies for the sake of the customers," he says.

Not far behind IBM is rival HP. Also a hardware and software behemoth, HP made news with its Utility Data Center software announced in fall 2001 and its Adaptive Management Platform road map from its OpenView software division. The product strategy, sounding much like IBM's auto-

"The personless network operations center ...

... is about as plausible ...

... as the paperless office."

Chris Utter, IS and technology project manager, Mary Kay



onomic computing, promises intelligent hardware and automated software that can ensure applications meet service levels, and free IT staff from constantly monitoring and reacting to network performance problems.

Jim Grant, OpenView's general manager, says the current stream of automation features in HP's management tools fall under the umbrella of service management. This moves today's automation away from past efforts that focused on gee-whiz technology, such as automatically monitoring static devices that don't support customers or end users.

Grant says corporate users need to target their automation efforts at the customer-facing services, and the elements that support those services. HP software can help clients identify, configure and automate the support of the 12 most-important applications to a client's line of business, he says.

"Automation today can help enterprises translate business language into technology language and cross

managed management space are Veritas and Microsoft.

Veritas closed 2002 by announcing it would acquire server provisioning software vendor Jareva Technologies and application performance management software maker Precise Software. While Veritas didn't indicate it would expand from storage to a broader automated management approach, Ptak says a company with that kind of cash could make its mark in management.

It has the potential to be a disruptive influence if it does go that way," he says.

The same goes for Microsoft.

"Management vendors should at least be thinking, 'What is Microsoft going to do?'" says Jean-Pierre Garbani, a director with Giga Information Group. He points to Microsoft's success with its Microsoft Operation Manager (MOM) software. He says Microsoft could look to improve upon the tool to address automated data center management. "The company did not show up on the management map at all, and then two years ago, it comes out with MOM and makes \$300 million."

#### Smart start-ups

New companies not intimidated by going up against the industry giants emerged last year: Vieo, Relicore, Troux and Appilog. These companies share the same philosophy that successful management must attack the problem from the top down. Until now, most tools attempted to manage business services by monitoring the infrastructure devices

that support them, then working their way up. Tools separately manage network devices such as switches and routers, and systems such as operating systems and servers. Then they correlate this information to determine application performance and quality of service. These start-ups propose to redefine the applications, underlying networks and back-end systems as components that support the service, thereby managing the whole vs. its parts. (See related story at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 3831.)

Vieo, for instance, is noteworthy because it will use hardware to reroute application traffic automatically and improve the delivery of business services.

"Clearly a cultural problem has to be overcome. The focus has to move off the network and storage and server resources and focus entirely on supporting the application that supports the business," CEO Robert Fabbio says.

Vieo's Adaptive Application Infrastructure Management (AAIM) appliance — expected to ship in the middle of this year — is a Layer 2 switch that will initially manage hosts running Web, application and database servers. AAIM will watch traffic looking for application abnormalities compared with predefined policies that, for example, say that traffic from an online ordering application gets priority over an MPEG file being downloaded to a user's desktop. Because AAIM is a switch, it can automatically redirect and reprioritize application traffic or reallocate network resources as needed.

Fabbio's concept that hardware can better automate than software might prove successful. Cisco also builds intelligence into its hardware to enable management, among other things, across the infrastructure. Dubbed the programmable network layer, Cisco says the switches, routers and hubs include automated management features users can launch. (See story, page 6.)

Garbani says newcomers such as Appilog, Relicore and

Troux also give the application top billing in their management approaches. The evolution of network discovery has evolved alongside automation, he says, from IP discovery to Layer 2 discovery to today's forays into application discovery.

"By discovering the application on the network, you can now look at all the components of the application and understand how they interrelate," Garbani says. The relationships between components can deliver a more accurate picture of where performance problems could crop up. Automatically discovering them would prevent network managers from pouring through event logs from multiple network devices.

#### Man vs. machine

Markel's Wilson this year slowly will unlock and deploy more automation features. He says he knows the technology can help him make the network more efficient and let him direct his attention toward aligning the IT infrastructure with Markel's line of business — rather than chasing down problems.

"We're only at 20% automation now, but we'll move our efforts closer to that ultimate goal of completely automating management further in 2003," Wilson says. While he wants to use the technology to his advantage, Wilson says automation is not a cure-all that will replace human expertise.

"When the automation fails, because it will, IT experts will be needed because there is nothing more powerful than the human brain when it comes to IT," Wilson adds.

Chris Utter, information services and technologies project leader at cosmetics giant Mary Kay in Dallas, agrees that automation can't do it all.

"The theory that the current automated management software can learn to respond to every scenario is naive," Utter says.

Utter uses eight software tools to manage across networks, systems, applications and storage resources. Most recently he installed Micromuse's Netcool/Omnibus management software, which automatically delivers a centralized, enterprise view of all the monitoring and alerting aspects of management in Mary Kay's network. He says the idea of advanced automation features is exciting and could represent significant cost efficiencies for his organization, but he doesn't believe automation will replace human intelligence and IT expertise.

"The personless network operations center is about as plausible as the paperless office," he says. "The idea can actually be detrimental to process improvement."

#### Still to come

Vendors still need to prove they can get automation right this time, but have been making progress.

"2003 will not be a year of dramatic revolution for management vendors," says Corey Ferengul, a program director with Meta Group. "We're going to see a slow evolution where these automation concepts, seemingly solid in theory, take shape in real-world tools — or not."

Joe Schinker had been burned by early automation tools, but recently turned to Smarts' InCharge service assurance software.

"I learned I had to be careful of my expectations when vendors started talking about automation," says Schinker, a network engineer at West Corp., a call-center provider in Omaha, Neb. InCharge autodiscovers West's network at a preset time daily and then automatically updates configuration changes.

"Now we get a heads-up on the problem before we hear from an end user. And I'd say 75% to 80% of the automation in this software is out-of-the-box," he reports. "If you told me last year that software could do that level of automation, I wouldn't have believed it."

Some still won't — until today's tools prove them wrong. ■

## Net management on auto pilot

Experts advise these steps before turning control over to the automated management tool:

- 1 Define business services: Include applications and underlying hardware.
- 2 Set performance parameters: Know your expectations.
- 3 Put processes in place: Ensure tools and staff follow the same.
- 4 Start small: Automate simple tasks and build from there.

over the Tower of Babel that perhaps limited the potential of the tools in the past," Grant says.

Top software NSM competitors BMC Software and CA could fall significantly behind IBM and HP because they lack a hardware element in their product portfolios.

"The hardware companies, such as IBM and HP, have approaches to drive down the monitoring and management information into the hardware environment," says Rich Ptak, president of Ptak and Associates. "CA seemed to dismiss this idea last year, saying it was years away from reality, and it made a serious error."

For CA's part, the company says it succeeds against its hardware-driven competitors with software that can manage and automate across third-party gear and applications to provide agnostic management options for heterogeneous enterprise networks. But server giant Sun, an unlikely player in the management market, might provide the gear on which CA and BMC can hone their wares, industry experts say.

Sun, with its N1 initiative, might be avoiding the typical management jargon in its pitches, but the company can't deny it's looking to sell self-monitoring services as part of its N1 open architecture. The first phase of Sun's staged approach involves server, storage and network virtualization to enable quick and cost-effective management.

Sun has partnered with BMC, which developed a version of its flagship Patrol software to automate management across Sun servers; and acquired Terraspring, a start-up with products that can automate server configuration and dynamically reallocate resources across data centers. Yet Ptak sees Sun as a distant third to IBM and HP in knowledge and experience in the network management realm. "Sun fails to link its 'technology vision' to a convincing chain of events and products that demonstrate the superiority of its vision over IBM's or even HP's," he says.

Other large well-known companies to watch in the auto-







# Looking Deeper, Working Smarter

An intelligent infrastructure provides **end-to-end QoS** for superior performance and control.

Every business has its priorities. So why not share them with your network? When you run your applications over an intelligent network infrastructure, you can ensure every data packet is handled according to the priorities and policies you set, bringing your network operations into perfect sync with your business goals.

Cisco intelligent switches and routers come equipped with the most sophisticated quality-of-service features available, allowing you to deliver predictable, measurable, even guaranteed levels of performance across the LAN and WAN.

An intelligent infrastructure looks deeper into network traffic, identifying the users and applications behind the streams of data. As a result, it can classify and mark packets to make sure your most pressing needs are met first, without stranding anyone or anything else. IP voice and video applications, for example, can be given precedence over less time-sensitive applications, eliminating the delays and packet loss that would otherwise get in the way of clear, cost-effective communication.

An intelligent infrastructure also makes more efficient use of bandwidth, which becomes particularly important as applications and services are extended across the WAN, where bandwidth is a scarce and pricey commodity. Applying QoS can significantly improve the response times of your most demanding applications, without increasing your company's bandwidth costs.

Cisco's QoS features are based on advanced networking protocols, which are seamlessly integrated with each other and the hardware through Cisco IOS® Software, the operating system that unifies all Cisco switches and routers and provides most of the intelligence in the network.

Cisco management software lets you can take full advantage of these capabilities without being an expert, and will even automatically apply best practices across all network devices. These management tools can help your company become more agile, too, making it easy to adjust to changing priorities. So easy, in fact, that policies can shift according to time of day, accommodating different business needs and patterns of network usage.

The end result is a network optimized to make your company as productive, efficient, and profitable as possible. And after all, isn't that the top priority?

## Advanced QoS mechanisms offer unprecedented control

Cisco intelligent switches and routers provide the industry's most comprehensive quality-of-service features, enabling you to maintain predictable performance levels and support delay-sensitive IP voice and video communications across the LAN and WAN. Features include:

**Classification:** Allows the network to distinguish different types of traffic based on the applications involved, then sort them according to established priorities.

**Marking:** Flags data packets to ensure they are handled based on their relative importance to your business goals, so the most critical needs are met first.

**Policing:** Limits traffic flows to defined rates so large files won't swamp the network and degrade application performance levels.

**Buffering:** Holds low-priority packets while urgent traffic moves ahead, which conserves bandwidth by avoiding the need to retransmit data.

**Scheduling:** Controls the timely delivery of traffic and alleviates congestion so applications can maintain peak performance levels.

Learn how the advanced QoS features of Cisco switches and routers can deliver a greater return on your investments in technology.

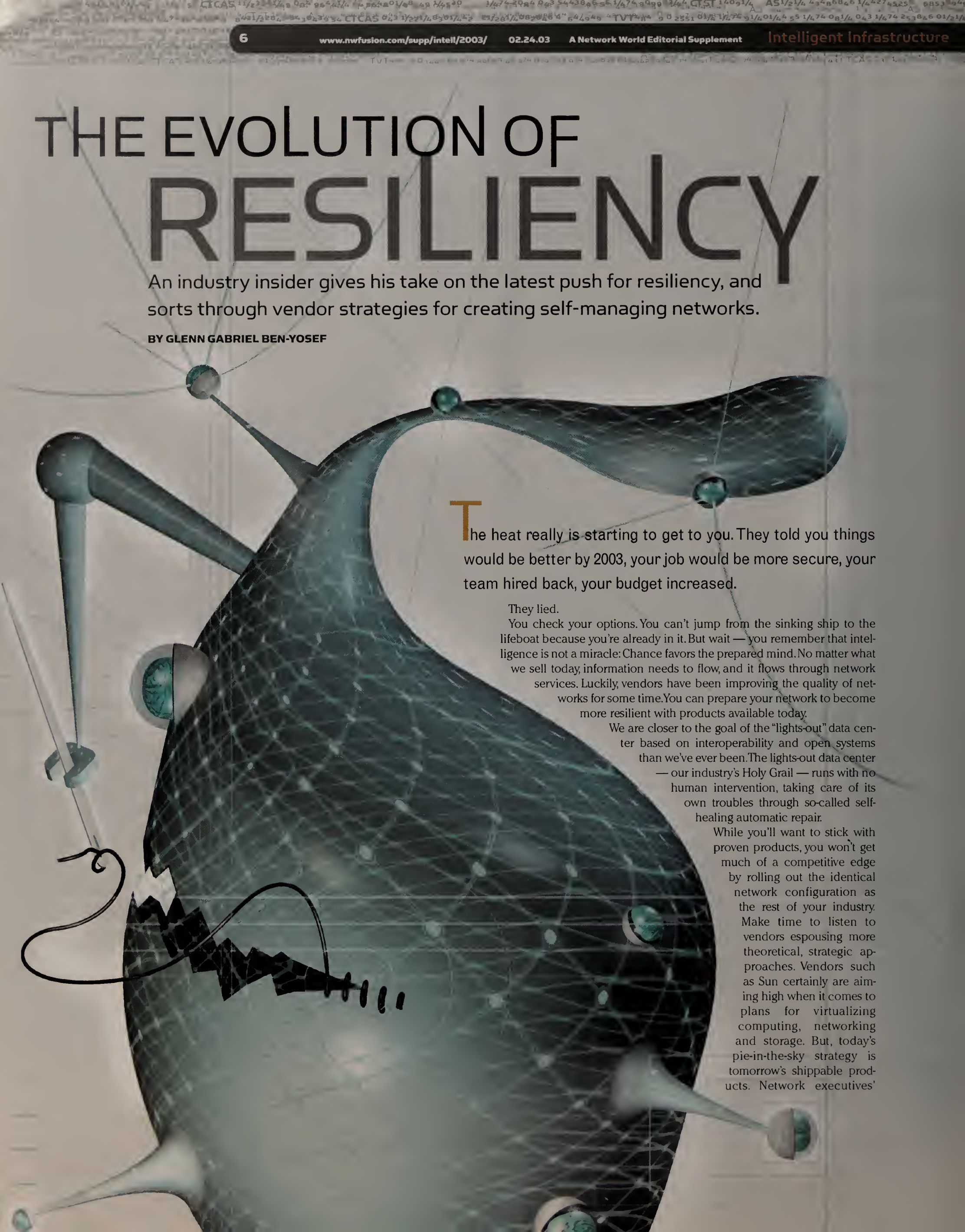
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# THE EVOLUTION OF RESILIENCY

An industry insider gives his take on the latest push for resiliency, and sorts through vendor strategies for creating self-managing networks.

BY GLENN GABRIEL BEN-YOSEF



The heat really is starting to get to you. They told you things would be better by 2003, your job would be more secure, your team hired back, your budget increased.

They lied.

You check your options. You can't jump from the sinking ship to the lifeboat because you're already in it. But wait — you remember that intelligence is not a miracle: Chance favors the prepared mind. No matter what we sell today, information needs to flow, and it flows through network services. Luckily, vendors have been improving the quality of networks for some time. You can prepare your network to become more resilient with products available today.

We are closer to the goal of the "lights-out" data center based on interoperability and open systems than we've ever been. The lights-out data center — our industry's Holy Grail — runs with no human intervention, taking care of its own troubles through so-called self-healing automatic repair.

While you'll want to stick with proven products, you won't get much of a competitive edge by rolling out the identical network configuration as the rest of your industry. Make time to listen to vendors espousing more theoretical, strategic approaches. Vendors such as Sun certainly are aiming high when it comes to plans for virtualizing computing, networking and storage. But, today's pie-in-the-sky strategy is tomorrow's shippable products. Network executives'





Today, if I'm lucky,

I'll be totally ignored.

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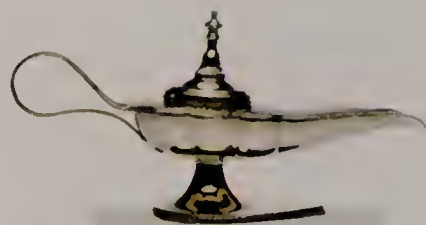


L5500

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challenge is to balance market realities against vendor strategies for creating competitive, resilient infrastructures.

#### Cisco's resiliency plan

Problems with information flow can basically occur in two places: in the device and in the network that connects devices. Both places are logical spots to improve resiliency.

Boosting the resiliency of the hardware and software in switches, routers and other network devices is relatively simple. The techniques we previously used to keep our infrastructures humming included keeping an off-site inventory of spare parts, maintaining redundant chassis, keeping on-site hot-swappable components and redundant cold/warm failover components. Cold failover components were "connected and configured" but not yet booted-up with software. Warm failover components were "prebooted."

We now have newer, more intelligent techniques such as load balancing, hot failover components, and software logic and state information to keep things running smoothly.

In the network, we look to topology and protocol. We used to have more network choices such as thick and thin coax, Ethernet, Token Ring, ARCnet and FDDI. Today we can expect dual homing, fiber and IP, Category 5 copper and Ethernet, and 802.11b. WANs still have SONET, ATM and frame relay. While little can be done about inherent network-protocol issues, multiple data paths will increase reliability.

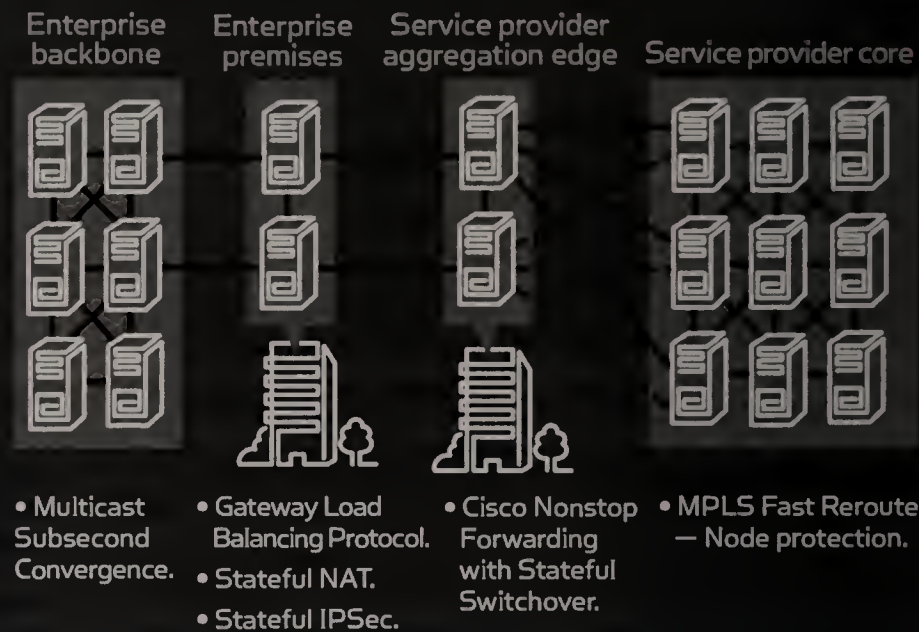
But resiliency is more than simply fixing what goes down. It is the ability to bounce back into shape or position, to recover strength after being stretched, bent or compressed. These attributes are exactly what Cisco says it hopes to provide for IP-based networks.

Cisco's Globally Resilient IP (GRIP) is an example of one vendor's effort at increasing availability regardless of the type of network architecture. "The whole idea is to give people a consistent end-to-end IP service experience," says Charles Goldberg, a product manager in the Internet Technologies Division at Cisco. "We do this by just offering a software upgrade and not requiring anyone to change hardware."

GRIP, an IOS technology, addresses resiliency in four areas: the link layer (frame, PPP and ATM connections), routing, Multi-protocol Label Switching and IP services (ensuring gateway router availability).

## Cisco's Globally Resilient IP

In an attempt at end-to-end network resilience, Cisco has distributed the features that comprise its GRIP IOS technology among various types of routers.



SOURCE: CISCO

and Border Gateway Protocol (BGP) uses TCP. Therefore, in the event of a route processor failure, BGP must reconverge. Non-stop Forwarding (NSF) is Layer 3 technology that forwards packets while the existing Layer 2 connections are handed off to the new route processor during SSO.

NSF SSO is available in the three major Cisco router hardware platforms that can support two route processors: the 7500, 10000 and 12000. The benefit of these combined Layer 2 and Layer 3 features is that the time to switchover from the failed route processor to the standby route processor is reduced from about 30 seconds to a high of 6 seconds on the 7500 to a low of zero seconds on the 12000, according to tests conducted by independent lab Miercom on Cisco's behalf. By running NSF SSO on your edge router, you probably won't experience much of a change in your next-hop router, so forwarding on the last known routes won't likely cause problems.

Cisco maintains what it calls "minimal and necessary state" information between the active and the standby route processor so that customers can run NSF SSO on older platforms such as the 7500, which has been in the market for about nine years with an installed base of about 130,000 units. That state information lets the standby route processor know which interfaces relate to which management interfaces. Other information, such as Open Shortest Path First or BGP routing tables, is not maintained, because Cisco says re-creating that information can be done before users know a stateful switchover occurred in their router or neighboring router. Stateful network address translation (NAT) maintains state for an internal IP addressing scheme. Features currently shipping include Nonstop Forwarding, Stateful Switchover, MPLS Fast Reroute — Node Protection, Multicast Sub-Second Convergence, IP Event Dampening, BGP Convergence Optimization and Stateful NAT. Cisco expects Gateway Load Balancing Protocol, Incremental SPF Optimization and Stateful IPSec to ship in the first quarter of this year.

GRIP interoperability with other vendors' network gear is a question. The issue surrounds what state information is maintained and what is re-created. Maintaining more state information increases resiliency, but is more difficult to do. Re-creating state is slower but relies completely on industry standards.

Juniper, Procket Networks and

## Intelligent layers

Vendors are pitching new tools and techniques for improving resiliency at each of the three major infrastructure layers — services, software and hardware.

Where resiliency resides	Technology	What it does	How you benefit
Services	Sun's N1, IBM's Blue Typhoon	Lifts business process off infrastructure.	Process virtualization.
Software	Cisco's Globally Resilient IP	Maintains Layer 2 connections during route processor failover.	Uninterrupted user experience.
Hardware	Redundant components, dual-homing	Provides continuous service during equipment and carrier failures.	Mitigates risk over carrier networks.

SOURCE: CLEAR THINKING RESEARCH

Stateful Switchover (SSO) is a feature of the Resilient Link Layer component of GRIP. The "stateful" part of SSO means that should a route processor fail, Layer 2 state information will be maintained with the standby route processor. The benefit is that no ATM, frame relay, PPP, High-Level Data Link Control or other Layer 2 connections are lost. The router will continue forwarding packets on the last known route. Then, once route table convergence is completed with the latest topology, the forwarding tables are updated.

Cisco routers don't maintain state for TCP session numbers,



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Redback Networks are working with Cisco via the Internet Engineering Task Force (IETF) to implement some protocol changes that will enable restarting the TCP connections to BGP and then re-creating state, a promising compromise. Cisco says the IETF work is in the pre-

request for comment stage. Still, Cisco has a history of introducing modifications to protocols, a tactic it might have to down-play should the market demand strict vendor interoperability. Vendors such as Alcatel and Avici say they hope to maintain all state information — including TCP

session numbers — without protocol modifications, which is cleaner from an interoperability standpoint, but more difficult to pull off.

#### Virtualizing IT resources: Sun's N1

While Cisco has been busy increasing

the router's resiliency, Sun wants to make the network invisible. Spelled out in its N1 strategy, Sun's idea is to divorce the tool from the task by lifting application, file, print and other business services off the underlying hardware computing and connectivity platforms, such as servers and networks, as much as possible.

This smashes the notion of platform specialization and frees developers to code "conceptually" to business services. This vision of the virtualization of IT resources is attractive, but the climate might not yet be right for such a massive paradigm shift.

Sources close to the company say Sun's steadfast commitment to N1 most likely stems from the "identity crisis" the company faces as it attempts to reinvent itself and live up to its reputation as an industry thought-leader. While Sun shook up the industry with the invention of Java, the vendor didn't execute its own Java plans well and the technology ended up benefiting other companies more than Sun.

The N1 vision is an extension of the idea of the "network is the computer," a phrase Sun CEO Scott McNealy coined years ago. The goal is to provide elastic resources that support business processes. But customers will derive real value from the N1 plan only when they can virtualize storage and network assets along with server assets. While Sun might have been successful in virtualizing what it already had on the server side, customers aren't convinced the vendor can make the necessary multivendor alliances for market success in those other two areas. Nor does Sun have the presence to create a critical mass of customers in storage and network gear by itself.

Sun's vision is exciting, even if its execution is questionable. Still, like Java, implementation of the vision could come from another vendor. IBM has a strategy similar to Sun's N1. With a newfound strong presence in services and Utility Management Infrastructure initiatives such as Blue Typhoon (that hopes to ease virtualization management), IBM could be that vendor. In this highly competitive market, the IBM edge is not as much in its technology as it is in its customer base. With so much of its revenue coming from midsize and large companies, IBM could start billing on a utility model, which would easily lead to virtualization and provide a real market for Sun's vision.

#### More with less

The lagging economy means fewer IT initiatives might be funded. But more is riding on them as business remains as competitive as ever.

You need to establish what IT service level is reasonable for your industry then set a course to attain and sustain that level. Fortunately, vendors are stepping up with products and services that help you do just that.

*Ben-Yosef is principal analyst at Clear Thinking Research in Boston. He can be reached at ggb@cthinking.*

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# THE INOCULATED SERVER

Many IBM, HP and Sun servers are already so intelligent they can diagnose, manage and heal themselves — yet vendors promise even more automation.

BY MARY RYAN-GARCIA

"Server, heal thyself" is the latest mantra of major hardware vendors offering the promise of streamlined IT operations through Lazarus-like "miraculous" technology. IBM is pitching its autonomic computing vision to all who will listen. HP and Sun are following suit with their own variations on utilitarian computing: HP with its utility data center (UDC) and Sun with its wide-reaching N1 initiative (see related story, page 6). All three approaches are similar: Create servers, software and related technologies that can heal themselves while interacting intelligently with other networked devices. The result is a wiser, more scalable and cost-effective IT environment.

The time is ripe for such IT wisdom, at least on the server front. According to Forrester Research, Global 3500 firms report server utilization at 60% — meaning \$20 billion in new servers was wasted last year.

Moreover, the tough economy has forced companies to squeak out efficiencies everywhere, a reality vendors say they are attempting to address. The theory goes that by making devices more self-sufficient, expensive man-hours can be recaptured from time-consuming, mundane management functions. Take IBM's recent autonomic computing initiative, a companywide, \$10 billion investment in hardware, software, services, and research and development that many say places Big Blue on the forefront of the automation movement.

IBM folded its Project eLiza self-healing server initiative into its larger, autonomic computing scheme and will offer autonomic functions for the eServer line, including the Intel processor-based xSeries, midrange iSeries and Unix pSeries servers. The company also offers autonomic features for the zSeries mainframe servers.

IBM's eServer products are self-configuring, in that hardware subsystems and resources can configure and reconfigure autonomously at boot time and during run time, according to IBM. Self-configuring servers also add or remove hardware in response to commands from administrators or hardware resource management software.

Further, IBM's eServer series is self-healing, meaning instant detection of hardware or firmware faults and prompt recovery from them without compromising the operating system and user-level workloads, IBM promises. Self-optimizing features autonomously measure performance and resource usage, adjusting configuration accordingly. Self-protecting features enable the servers to guard against internal and external threats to systems and applications integrity.

In addition, IBM is rolling out new features for its flagship Tivoli network management software that automate tasks across network systems including servers. Tivoli Risk Manager produces periodic

"heartbeats" that upstream servers use to verify the operational status of specific server systems, and it monitors for security events across the IT infrastructure and then automates security incident analysis. Risk Manager uses algorithms to correlate security alerts and identify threats to server systems and data, and then it conduct automated responses such as server reconfiguration, security



"Self-healing features for NT process failures can be managed automatically by the system vs. by a body."

Ronda Kiser, a senior IT manager, Whirlpool



patch deployment and account revocation.

In all, IBM in October laid out plans for boosting its systems management portfolio with 26 autonomic-related offerings, including new identity and storage resource management software. IBM's Storage Systems Group also announced autonomic features for its Enterprise Storage Server, named Shark. A few products already are available with autonomic features, but most will be upgraded over the next year or more.

### Using is believing

Whirlpool already reaps the benefits of the autonomic trend on technical and strategic fronts, says Ronda Kiser, Whirlpool's senior manager of Midrange & Distributed Operations Services for the company's IT division, in Benton Harbor, Mich.

"The ability to automatically 'detect and fix' a problem at Whirlpool can reduce the amount of time a physical body spends checking logs and digging through the infrastructure," Kiser says. "The system will do it for us. This should reduce outages, and increase availability and human productivity — a win-win solution."

The \$10 billion appliance manufacturer recently began using supply-chain management software from i2 Technologies on two pSeries Unix servers. This software-autonomic server combination has been instrumental in easing management of Whirlpool's supply chain, Kiser says.

Whirlpool is a solid IBM shop, running about 500 servers from the Netfinity and RS/6000 lines and a smattering of pSeries Unix servers, including the autonomic 660, 680 and 690. Other than the i2 supply-chain software, Whirlpool runs enterprise application software from SAP and Siebel Systems. It relies on IBM/Tivoli systems management tools.

Whirlpool also has started taking advantage of the IBM xSeries Intel processor-based autonomic servers. The company has more than 300 of these Windows NT servers running IBM Director 3.1, which gives IT central management for systems placed globally. Whirlpool plans to complement that centralized management with Tivoli Distributed Monitoring and perhaps Tivoli Enterprise Console software, for centralized event management, Kiser says. By doing this, she says, Whirlpool has a path toward even more automation for NT, gaining features such as automated help-desk ticket generation. "Self-healing features for NT process failures can be managed automatically by the system vs. by a body," she says.

Beyond NT servers, Kiser sees the role of automation as valuable for business applications such as SAP. Self-healing can fix the application, or its underlying infrastructure, when problems are detected. She envisions the day when the infrastructure is tied together with end-to-end system management software. That, she says, will "drive down the amount of resources that are required to investigate and resolve problems." Self-healing of servers and other infrastructure components becomes central for IT because "recognizing, evaluating, communicating and healing are the keys to keeping our service-level agreements with the business," she adds.

Kiser anticipates that such future automation will reduce help-desk calls as self-healing servers will fix systems often before end users experience problems. Or, she says, Whirlpool can automatically message its more than 17,000 worldwide employees that it has identified the problem and is working toward a fix, thereby minimizing calls to the help desk, which Whirlpool outsources to HP.

### Two more for self-management

HP also is in the self-managing data center race with its UDC, a line of products that aims to virtualize a company's data centers into a single pool of resources, including remote locations. Since announcing the UDC product family in November 2001, HP has extended its vision to include server, storage and network offerings. These are integrated, deployed and monitored by intelligent management software.

For example, a Web retailer that needs 25 servers to handle online transactions during the Christmas rush but only five servers during the rest of the year could use UDC to grab capacity from other corporate servers during the holiday season. It could temporarily reallocate capacity from a development environment, a human resources system or an SAP system, says Nick van der Zweep, HP's UDC director. UDC also provides failover of systems such as firewalls, load balancers and servers running Windows, Linux, HP-UX, Solaris and other operating systems, he says.

HP beefed up its self-managing server muscles with the acquisition of Compaq and its ProLiant line of servers. The ProLiant BL server blade line has intelligent fault-resilient power and integrated, "lights out" remote management features, HP says.

Sun is entering the competition with its N1 initiative. Like its competitors, N1 wants to offer users automation and virtualization — the so-called utility computing environment. To that end, Sun in November made two acquisitions. It bought Terraspring, for its server configuration technology, and Pirus Networks, for its storage switches.

First on the N1 agenda, Sun has added automation features to its server management software, and addressed virtualization. Through software available now users can aggregate servers, storage, even cabling. The Terraspring software creates what Sun calls logical server farms that the software automatically creates and configures. Other N1 software reallocates and monitors resources as well. Sun has promised to add service provisioning and policy automation to N1 for delivery later this year.

But Sun isn't totally ignoring the servers themselves. The Sun Enterprise 10000, for instance, offers systemwide error detection and correction. And, Sun says it will release an N1-enabled blade system sometime during the first quarter.

### The server foundation

Despite the current vendor hullabaloo, self-managing servers are a substantial paradigm shift and true automation of them looks to be three to five years out, says John Humphreys, a senior analyst with IDC.

But vendors aren't the only people that see an automated future. Forrester has dubbed its vision of the automated future as "organic IT." It calls for an overhaul of server networks, storage, software and processors so that a computing infrastructure automatically shares and manages companies' IT computing resources. Before these new buzzwords from vendors and analysts appeared, the industry called the concept of the self-sufficient infrastructure the lights-out data center. As Humphreys explains: "Organizations want to integrate their information structure under one roof."

Whatever the name, servers are the foundation on which the future of the intelligent infrastructure rests.

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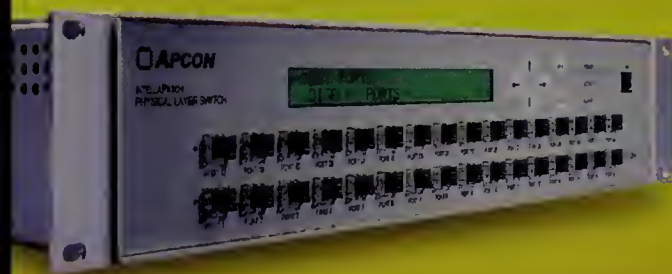
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# The Edge

■ SERVICE PROVIDER DEVELOPMENTS  
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AND THE NEW PUBLIC NETWORK

## Nortel unfolds VoIP service road map

■ BY JIM DUFFY

OTTAWA — Nortel last week rolled out a broad initiative geared toward getting service providers to use its latest packet telephony equipment to deliver new services.

At the heart of the plan, dubbed Succession Services, is technology designed to support services that promote user mobility and integrate multiple devices and media — such as e-mail, cell phones, home telephones and PDAs.

The initiative includes a service road map, product enhancements and expanded co-marketing program. The road map shows carriers how to stimulate enterprise and consumer demand needed to generate service volumes.

One destination on this road map is a new Nortel offering that supports managed services called Succession Voice over IP (VoIP) VPN. VoIP VPN brings together branch offices and telecommuters onto a single telephone dial plan, and lets service providers manage a company's voice network for them.

VoIP VPN is hosted on Nortel's Succession Communications Server 2000 and 2000-Compact softswitches. VoIP VPN lets companies reduce ongoing operational expenditures by up to 25%, the vendor says, citing internal research.

VoIP VPN is the latest in a suite of Nortel offerings that enable managed services. The others include hosted multimedia and packet voice services such as Succession Centrex/Centrex IP, Personal Communications Manager, Multimedia and Collaboration, Internet Voice and Primary Voice.

To help carriers combine these services into bundles, Nortel announced several softswitch enhancements under the Succession Services plan:

- Adding H.323 interfaces to support direct packet interworking with H.323 IP PBX systems and gateways. This will enable

### In Succession

A rundown of Nortel's packet telephony service packages.

- Succession VoIP VPN lets service providers manage a company's voice network and integrate other data services.
- Succession Centrex and Succession Centrex IP provide evolution to packet telephony with line-by-line migration and more than 200 business features.
- Succession Personal Communications Manager enables Web-based, end-user-programmable call-screening, routing and management.
- Succession Multimedia and Collaboration combines voice, video, and text media in one communication session. Services include Web-based video calling, instant videoconferencing and presence-based collaboration capabilities.
- Succession Internet Voice provides voice over broadband.
- Succession Primary Voice provides a regulatory-compliant primary voice service set for new market entry and competitive service differentiation. Features Class-5 residential voice services equivalent to public switched telephone network.

converged VoIP VPN services to be offered to the growing enterprise base of IP PBXs.

- Expanding support for Session Initiation Protocol to enable direct packet interworking with SIP-based enterprise PBXs or gateways. This will broaden the market for VoIP VPNs, Nortel says.

- SIP extensions that integrate Succession softswitches and Succession Interactive Multimedia Server to enhance the multimedia features carriers deliver to existing phones.

- SIP proxy capability to allow multimedia traffic to cross enterprise and public switched telephone network domains, and

carrier boundaries. The ability to add multimedia services or personal call management to existing telephones could increase carrier revenue by up to an average of \$18 per business line and \$15 per residential line, Nortel says, citing internal research.

Nortel also has expanded its co-marketing program, MarketForce, to include the results from a detailed market research study designed to understand specific buying patterns. The data is intended to strengthen carriers' business planning and pricing analysis, and let them accelerate new service revenue generation with promotional and lead-generation campaigns. ■

## Cisco unveils router for managed services

■ BY JIM DUFFY

SAN JOSE — Cisco recently unveiled a router for customer-edge applications such as an Internet campus gateway or a service provider managed service.

The Cisco 7301 is a 1U device designed for service providers to offer managed services such as high-speed Internet, IP VPNs and metropolitan/WAN connectivity to corporations. Citing a recent Gartner report, Cisco says the U.S. managed services market will increase at a 27.6% compound annual growth rate to \$8.2 billion by 2006.

The 7301 sports three onboard copper or optical Gigabit Ethernet ports and three RJ-45 Fast Ethernet ports. It also includes a single-port adapter slot to support Cisco's 7x00-series router interfaces.

The 7301 features a 700-MHz integrated processor, up to 1G byte of dynamic RAM

and up to 256M bytes of flash memory. The router can support up to 1 million routes and forwards more than 900,000 packet/sec, Cisco says.

The router's WAN interfaces include serial and multichannel T-1/E-1 and T-3/E-3; OC-3/STM-1 packet-over-SONET and ATM; T-1/E-1 Inverse Multiplexing over ATM; ISDN Primary Rate Interface and Basic Rate Interface; and High-Speed Serial Interface. The product supports hardware encryption and Layer 3 compression for VPNs.

Among the managed service features the 7301 supports are Network Address Translation; Cisco's Network Based Application Recognition; quality-of-service control through Committed Access Rate, Weighted Random Early Detection and Weighted Fair Queuing; and stateful firewall.

Service provider applications for the 7301 include broadband aggregation, gateway

functions between IPv4 and IPv6 networks, Multi-protocol Label Switching-customer edge, and a route reflector. The 7301 is installed at Canadian service provider Primus Canada.

Separately, Cisco announced a port adapter carrier card for the 7304 router that lets routers accept existing 7x00-series port adapters.

Pricing for the 7301 starts at \$18,000; the 7304 starts at \$22,000. Both products are now available. ■

**Short Takes**

■ **Packet Design LLC** last week spun off two new companies to further develop and market its network technologies. One of the new spinoffs, **Packet Design** will offer a line of network appliances that extends the routing control plane to address the reliability, performance, scalability and predictability of IP networks. The second spinoff, **Precision I/O**, will commercialize a high-speed network architecture developed by Packet Design that will let servers take advantage of increasing networking speeds, including 10G bit/sec Ethernet. The parent company will maintain a majority ownership in the spinoffs and will continue to assist in their development and funding, and manage common services. Packet Design LLC founder **Judy Estrin** will be chairman of both new companies.


■ **Redback Networks** recently announced it has extended its partnership with **Sheer Networks** and added **Cplane** to its Solution Alliance Program. These operational-support-systems partners aim to ease provisioning and management of IP/Multi-protocol Label Switching VPN services enabled by the Redback SmartEdge 800 router. Cplane provides software, called ServiceControl, to provision and engineer service providers' packet networks for improved service performance. Redback's partnership with Sheer now includes support of the SmartEdge 800.



### More online!

See what enhancement Cisco has made to other routers in its 7x00 series  
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# Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

## Security, efficiency are key to AES

■ BY WILLIAM STALLINGS

Advanced Encryption Standard supplants the Data Encryption Standard and Triple-DES to strengthen security and boost efficiency.

Adopted in 1977 as Federal Information Processing Standard (FIPS) Publication 46, the aging DES encrypts data in 64-bit blocks using a 56-bit key. In 1999, the National Institute of Standards and Technology (NIST) issued a new standard, FIPS PUB 46-3, calling for the use of Triple-DES except for legacy systems. In essence, Triple-DES involves repeating the DES algorithm three times on the plaintext of using two or three different keys (112 bits or 168 bits) to produce the ciphertext.

The principal drawback of Triple-DES is that the algorithm is relatively sluggish in software. The original DES was designed for mid-1970s hardware implementation and does not produce efficient software code. Triple-DES, which has three times as many rounds of encryption as DES, is correspondingly slower. Another weakness is that DES and Triple-DES use a 64-bit block length. To gain efficiency and security, a larger block length is desirable.

Because of these drawbacks, Triple-DES

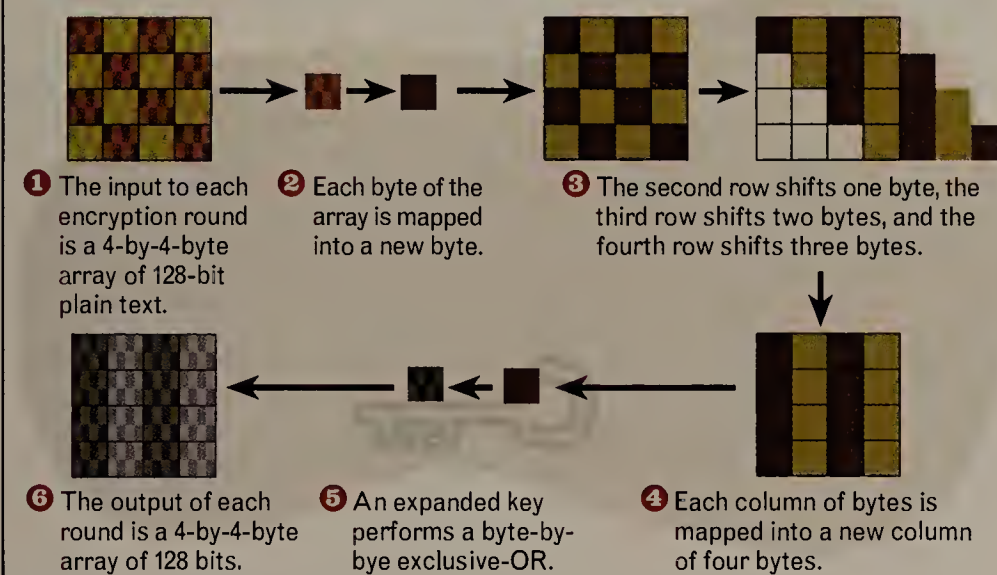
### Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you want to contribute a primer on a specific technology, standard or protocol, contact Amy Schurr, senior managing editor, features (aschurr@nww.com).

### HOW IT WORKS

### Advanced Encryption Standard

AES requires 10 rounds of processing. A typical round includes the following steps:



isn't a reasonable candidate for long-term use. In 2001, NIST issued AES, known as FIPS 197. AES has a block length of 128 bits and supports key lengths of 128, 192 and 256 bits.

The version of AES with a key length of 128 bits is likely to be the one most commonly implemented; this length is sufficient to provide security and requires less processing time than a longer key length. Thus far there doesn't appear to be any critical weaknesses in either AES or Triple-DES, so the level of security is directly proportional to the key length.

The input to the encryption and decryption algorithms is a single 128-bit block. This block is arranged in a 4-by-4-byte matrix called the state array, which is modified

at each round of encryption or decryption. After the final stage, the state array is converted back to a linear string of 128 bits. Similarly, the 128-bit key is depicted as a square matrix of bytes. This key is expanded into 10 individual keys — 10 rounds of processing produce the result.

A typical round consists of four stages. The ByteSub stage uses a table, referred to as an S-box, to perform a byte-by-byte substitution of the block. That is, each input byte is mapped into a unique output byte.

In the RowShift stage, the first row of the state array is not altered. For the second row, a 1-byte circular left shift is performed. For the third row, a 2-byte circular left shift is performed. For the fourth row, a 3-byte circular left shift is performed.

The MixColumns stage is a substitution that alters each byte in a column as a function of all the bytes in the column.

For the AddRoundKey stage, a 4-by-4-byte portion of the expanded key is used; each byte of the expanded key is combined with the corresponding byte of the state array using the exclusive-OR function.

The structure of AES is quite simple. For both encryption and decryption, the cipher begins with an Add Round Key stage, followed by nine rounds that each include all four stages, followed by a 10th round of three stages. The last round does not use the MixColumns stage.

Only the Add Round Key stage uses the key. For this reason, the cipher begins and ends with an Add Round Key stage. Any other stage, applied at the beginning or end, is reversible without knowledge of the key and so would add no security.

The cipher provides alternating operations of XOR encryption (Add Round Key) of a block, followed by scrambling of the block in the other three stages, followed by XOR encryption, and so on. This scheme is both efficient and highly secure.

As with most block ciphers, the decryption algorithm uses the expanded key in reverse order. However, the decryption algorithm is not identical to the encryption algorithm.

Current implementations of AES are in software, but you can expect to see firmware/hardware implementations as the encryption scheme becomes more widely used.

*Stallings is a network consultant and author. His most recent book is Cryptography and Network Security. He can be reached at ws@shore.net.*

## Ask Dr. Internet

By Steve Blass

**We have an asymmetric DSL connection to our ISP, which uses Dynamic Host Configuration Protocol for IP addressing. We have to use the ISP's software to connect to the Internet (which uses PPP over Ethernet), and do it through a PC running Windows 2000. We have a Multitech RF500S DSL Router with a four-port hub. When we try to configure the router, it looks for a static IP address in the 192.x.x.x range. How can the router resolve DHCP with a**

**static IP address? Can we get multiple users on the ADSL connection without a static IP address?**

You can support multiple users without a static IP address. The RF500S manual (available at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 4431) says PPPoE is supported and includes instructions for establishing a PPPoE connection to your ISP through the browser-based router administra-

tion interface in the "ISP Additional Settings (PPPoE Settings)" section of the manual. Once configured, your network will appear as one user to the ISP, while your users are able to share the connection.

**Blass is a network architect at Change@Work in Houston. Have an Internet-related question? Send your questions to [dr.internet@changeatwork.com](mailto:dr.internet@changeatwork.com).**



GEARHEAD  
INSIDE THE  
NETWORK  
MACHINE

Mark  
Gibbs



## Services from any app

the Windows Network system tray applet and most antivirus products) and control panel applets (such as the display, keyboard and mouse applets). These control programs act as front ends to services and placing them in the system tray or the control panel simply makes for a tidier user interface (mostly).

Services are important not only because they can execute without affecting the user interface but also because they can execute when no user is logged on.

You can set up any program as a service, including compiled applications, Visual Basic programs, Java applications and scripts. AtYourService creates a wrapper for the batch file or program so it acts as if it were a service. This wrapper is registered with the SCM and mediates the control requests to start and stop the service.

We were impressed with AtYourService when we tried it under Windows 2000 and XP with a tool we use in the Gearhead bunker called Ping Plotter (reviewed in June 1999; see DocFinder: 4437).

Ping Plotter is a sophisticated graphical traceroute tool and the only problem with it is that if we don't log onto our server, Ping Plotter won't run — it is not a service. This is a shame as one of the neat features of the tool is that it can automatically export an image of its graphs in Portable Network

Graphics format. We use these graphs in our Web-based network management system but if the server gets reset or we log out for security reasons, the Web pages that use the graphics don't get updated.

So we used AtYourService to create a service using a batch file to launch Ping Plot-

vices and their status, and can start or stop them similarly to the Services applet under Windows NT or Win 2000.

In the AtYourService main window you also can edit the properties of a service and create and delete them if you have administrator privileges. Service creation is a wizard-like process that guides you through setting up the service.

With the enterprise version of AtYourService you can export services so they can be installed on another machine.

Be careful in you assumptions about the behavior of the services you create: Regular applications tend to expect user interaction for error conditions and with AtYourService there's a temptation to create services that don't interact with the desktop (that is, don't present their graphical user interface). While that sounds good, it can create a service that is horribly hard to debug if it fails.

AtYourService is a really cool concept and produces effective services as long as you test them thoroughly. Priced at \$60 for a stand-alone license and \$200 for the enterprise license with cluster, site and OEM licenses also available, AtYourService is highly recommended.

Serve comments to [gearhead@gibbs.com](mailto:gearhead@gibbs.com).

### GEARHEAD SCORECARD

Product: AtYourService 3.0.8

Functionality.....B  
Elegance.....B  
Value for money.....A

Overall grade  
**B**

Vendor: Prism Microsystems  
[www.prismmicrosys.com](http://www.prismmicrosys.com)

ter. It took some fiddling to get it to work correctly and at one point we managed to create a Ping Plotter service that took out the menu that appears when you hit the start button! The product's biggest weakness is you apparently can create an unstable service that can damage the operation of the system.

The AtYourService program can be run locally or from any Windows PC that is authorized to access the services on the target machine. It displays the list of ser-



## Cool Tools

Quick takes  
on high-tech toys  
By Keith Shaw

### Skyscape bundles PDAs with medical references

Skyscape ([www.skyscape.com](http://www.skyscape.com)), which makes medical reference software for PDAs, recently announced a PDA bundle for nurses, as well as specialized content from the *Special Operations Forces Medical Handbook*.

The package costs \$200 and includes a Palm m130 color handheld bundled with Skyscape content. The content includes one of two software offerings — DrugGuide, the handheld version of *Davis' Drug Guide for Nurses*; or RnNDH, the handheld version of *Nursing 2003 Drug Handbook*. Other refer-

ence software for nurses and nursing students is available from Skyscape, the company says.

Skyscape's emergency medicine reference book software (\$65) includes 270 images and 50 tables, and provides content for doctors, nurses and emergency medical technicians for when they are away from a typical working environment, Skyscape says. The software is available for Palm OS and Pocket PC devices.

### NEC launches thin and light Tablet PC

NEC Solutions ([www.necsolutions-am.com](http://www.necsolutions-am.com)) last week launched its Tablet PC by going thin and light and offering bundled business software. The NEC Versa LitePad starts at \$2,400 and is aimed at the healthcare, field sales and professional services markets, the company says.

The LitePad measures 11.7 by 0.6 inches, weighs only 2.2 pounds, and has a 10.4-inch wide-angle display, NEC says. The tablet ships with an Intel Ultra-Low-Voltage Mobile Pentium III processor at 933 MHz. It has 256M bytes of RAM and a 20G-byte hard drive. The tablet also includes integrated 802.11a or 802.11b wireless connectivity, and an Ethernet port for connecting to wired networks.

Bundled software with the tablet includes Adobe Acrobat Reader Version 5.0, Alias/Wavefront's SketchBook Pro, Colligo Networks Personal Edition (peer-to-peer wireless LAN software), Corel's Grafico (annotation and design software), FranklinCovey TabletPlanner, Office XP Service Pack for Tablet PC and Zinio Reader (eBook software).

### SMC gets into 802.11g

SMC ([www.smc.com](http://www.smc.com)) last week announced new 802.11g (prestandard) wireless equipment. The new line includes a wireless cable/DSL broadband router, a Cardbus adapter (PC Card for notebooks, \$80) and wireless PCI Card (for desktops, \$90). Shipments will begin next month, SMC says.



The TDP-D1 from Toshiba boasts 2,000-lumen output.

The Barricade G 2.4-GHz 54M bit/sec Wireless Cable/DSL Broadband Router (\$140) includes a four-port, dual-speed 10/100M bit/sec switch, and Stateful Packet Inspection, a firewall, network management features and VPN passthrough support. Wireless features include the ability to disable SSID broadcasting, Media Access Control address filtering, and support for 64- and 128-bit Wired Equivalent Privacy. Support for 802.1x authentication and Wi-Fi Protected Access will be included in the second quarter, SMC says. The 802.11g equipment is backward-compatible with 802.11b-based products, the company.

### Toshiba ups the brightness on new digital projector

Toshiba's Computer Systems Group ([www.csd.toshiba.com](http://www.csd.toshiba.com)) last week announced a new portable projector with a brightness of 2,000 lumens, which is at the upper end of brightness for its weight and price. The TDP-D1 weighs 5.3 pounds, delivers an 800:1 contrast ratio and supports XGA (1,024-by-768-pixel) resolution. The projector costs \$2,700.

Other features include automatic keystone correction, and a monitor output port that lets users connect to an external monitor in addition to the projector. This feature also includes passive loop, which lets the external monitor function if the projector is not turned on, Toshiba says.

Shaw can be reached at [kshaw@nww.com](mailto:kshaw@nww.com).



Skyscape is bundling medical reference software on a Palm m130 for nurses and nursing students.



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## EDITORIAL

John Dix

## Forget phone cameras; give me apps

**M**obile telephone operators from around the world gathered last week at the 3GSM World Congress meeting in Cannes, France, to talk about cell phone advances, including devices capable of supporting videoconferencing.

While ultimately these tech marvels might appeal to consumers, (witness the fascination with cell phones that can capture and transmit photos) to pluck dollars out of business pockets, mobile operators might be better off looking at technology available today from a company called Action Engine.

Action Engine's Mobile Web Services Platform is a client/server package designed to simplify the process of using a cell phone to interact with the Web. Instead of trying to shoehorn a regular browser into a phone, Action Engine's software is optimized for the limitations of the client (Pocket PC devices today, and Smartphone 2002, Palm and Symbian in the future).

The fat client is written in C++ and applications that ride above it are written in XML, meaning carriers can customize applications and ultimately deliver them for a range of client devices.

Applications shown to me were for demonstration purposes, but they give a good sense of what carriers could create for business users: a phone with an oversized screen that lets you do everything from make airline reservations to look up directions and find restaurants.

The beauty of the system is it is menu-based, meaning you select items instead of having to key in data, a huge time-saver. The client even memorizes former requests so when you go to make your next flight reservation you simply can rebook rather than start from scratch.

What's more, the client treats data as object that can be shared with other applications. If you book a flight, for example, then pull up an application to find a restaurant, the device determines that you might want to dine at your destination and offers that as an option.

Caching data means that 95% of the processing is done on the client, minimizing need for high-speed network connections. This also means that if you lose a connection you don't have to start all over.

The phone has become a PC, says Amar Patel, director of product marketing. Unlike older cell phones, the operating systems in these new devices have file systems. Couple that with the fact that networks support higher speed, and the "technology has caught up to the imagination," he says.

Now if only carriers would focus on delivering capabilities like this instead of cell phone cameras.

— John Dix  
Editor in Chief  
jdix@nww.com

### Partners responds

Partners Healthcare would like to address inaccuracies in the story "Proxim pitches wireless LAN switch" (www.nwfusion.com, DocFinder: 4432), which mentions our deployment of wireless networks. First, Partners Healthcare is not an HMO; it is an Integrated Delivery System, a network of hospitals in eastern Massachusetts. Second, we have not halted wide-scale deployment of Cisco Aironet access points nor do we intend to do so.

Partners has worked diligently to implement Cisco's Lightweight Extensible Authentication Protocol (LEAP) to ensure secure transmission of data over its wireless infrastructure. Partners is committed to LEAP and its merits while focusing on addressing key points of concern as pointed out in the story: managing large, wide-scale wireless deployments and striving to further enhance the security of the model.

Scott Rogala  
Corporate manager, network engineering  
Partners Healthcare  
Boston

*Editor's note: Network World regrets the errors.*

### WLANs weigh anchor

Regarding "Navy set to navigate with wireless LANs" (DocFinder: 4429): I hope the Navy understands that the 802.11 standard is under considerable risk of interference. Spectrum management risks on a TCP network might be acceptable because there is always a chance to resend packets, but that is a bit harder to do when the fleet is taking fire. Most commercial 802.11 wireless access points use the same frequency ranges as many other common systems, such as cordless tele-

*E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.*

# opinions!

phones. I hope the Navy won't be quick to abandon its conventional systems.

Jeff Engelbrecht  
Triangle, Va.

The key point is the ability of the wireless LANs to survive in the electromagnetic environment aboard a ship. We are talking multiple megawatt radiated energy radars aboard, not to mention other emitters. Wireless LAN gear is not designed to survive in this environment.

Donald Smith  
Principal analyst  
MTC Huntsville  
Huntsville, Ala.

### Easier computers

Regarding Mark Gibbs' Backspin column "Making computers easier" (DocFinder: 4430): Making computers easier is easy to speak of but difficult to quantify. Things are simple enough as they are, if we would be allowed to catch up with what already is there.

I have learned many versions of DOS and Windows. I'm learning Windows XP, although I really have no use for it yet. I have had to learn Office 4.3, 95, 97 and 2000, and I have yet to play with Office XP.

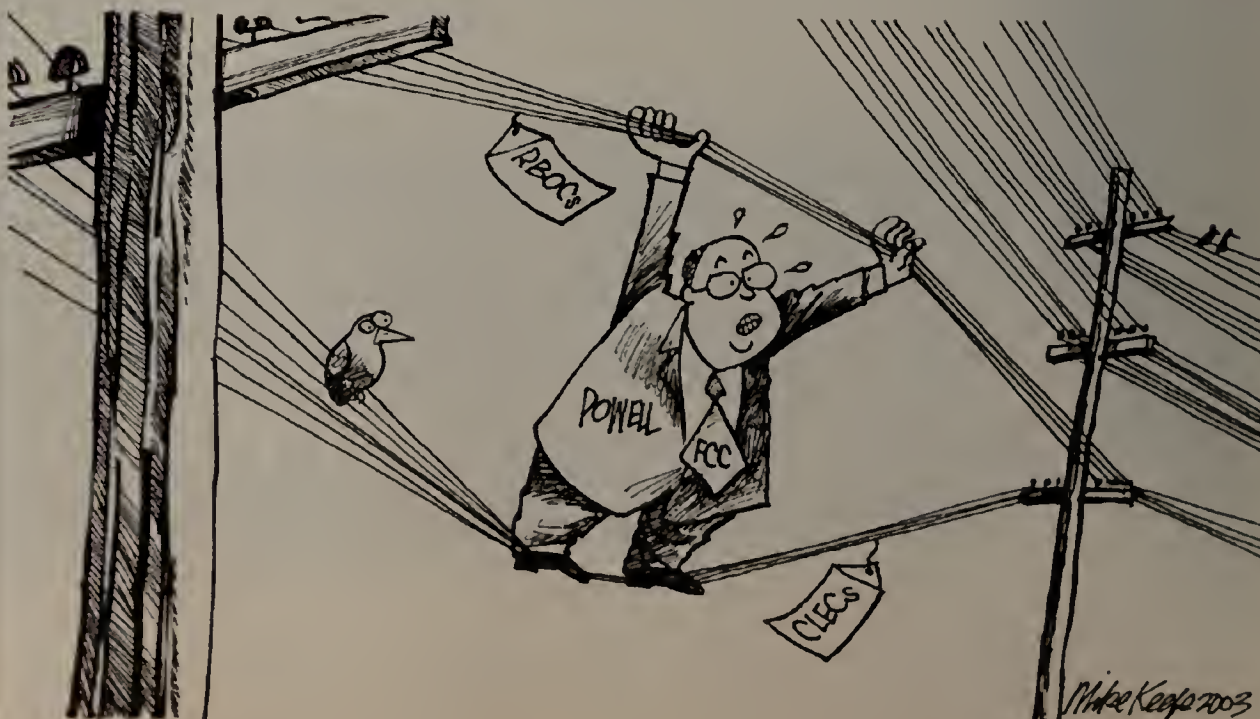
This is just the tip of the iceberg of what PC support personnel need to have a handle on, and it gets more complex every year. Why? When we hit Windows 98SE and Office 97, we really had all we needed for the average user, but we moved on... and on.

Each time we get a new operating system, there are many new features to learn, and things that we liked in the old version are gone. I am not opposed to learning, but when does it end — or slow to a fairly reasonable pace?

Glenn Bloom  
Computer specialist  
Federal Aviation Administration  
Oklahoma City



**More online!** [www.nwfusion.com](http://www.nwfusion.com) Find out what readers are saying about these and other topics. **DocFinder: 4428**







## VENTURE OVER THE HORIZON

Todd Brooks

It is always challenging to look out at a new year and predict which technology sectors will be most important to network managers and most promising for venture investors. The year ahead is particularly difficult because so many economic and political questions remain unresolved. However, here are my predictions:

- Network security will continue to be important. Intrusion detection and vulnerability assessment are good investment areas in 2003, as are application security and host-based security products. Ultimately, however, we will see more tightly integrated products to reduce costs and management complexity. VPNs will become more flexible and less expensive as start-ups provide technology to automate the set-up and management processes.

- Another important issue for network managers this year will be how to deal with the increase in remote wireless devices accessing corporate networks. Managing these devices, provisioning applications, and providing security at the device and network levels will be critical. Wireless messaging services are becoming not just a person-to-person service, but also a way for companies to get information to consumers or to communicate with employees.

- Data storage and voice over IP (VoIP) were investment bright spots in 2002 and should continue to do well this year. We will see less expensive and more automated ways to store important data with more intelligence added to the storage networks. Important companies in this

# Secure start-ups will fare best in '03

area are Mayfield investments 3Par Data and OnStor.

- VoIP will continue to gain traction largely in branch and small offices. We will not see massive deployments this year, but after several years of trials, carriers will begin to roll out VoIP services such as IP Centrex or IP videoconferencing. Mayfield investments in this area include Convedia, a media server company, and Sylantro, an applications-enabled softswitch vendor.

- A trend that will have far-reaching consequences is the deployment of standard-based hardware into the network arena. Standardized hardware has driven out proprietary hardware at the desktop and network edge and is now starting to move into core servers and network equipment. This will provide a real opportunity for start-ups. In the past, funding network hardware companies was capital-intensive because equipment had to be built from scratch. With standard hardware, start-ups can leverage industry-standard processor technology and will be better able to focus on innovation and differentiation in the software layer.

If there is an overriding issue for venture investors in the network arena this year, it is how to interest network managers in the products and services of start-up companies. Network spending will be going toward deferred projects from the previous several years. Start-ups with finished products and customers in place will have the best chance of getting a foot in the door.

*Brooks is a general partner with Mayfield, a venture capital firm in Menlo Park, Calif. He can be reached at [tbrooks@mayfield.com](mailto:tbrooks@mayfield.com).*

**Network spending will be going toward deferred projects from the previous several years.**



## ABOVE THE CLOUD

James Kobielus

To most users, the Web is a "world wide wait." The typical browsing session has more long, awkward pauses than a Swedish art film. Even power users with broadband connections are frustrated by HTML pages that take too long to display and files that take forever to download.

The new generation of Web services, grounded in XML and Simple Object Access Protocol (SOAP), isn't fundamentally faster or more reliable. The reason for this sad state of affairs is that XML and SOAP are just new freight in old boxcars, and the rails they're riding are the Web's HTTP. What's lacking from HTTP is a standardized means for ensuring guaranteed, timely delivery of content — be it HTML, XML, streaming video or anything else — from server to client. Instead, HTTP offers what's euphemistically known as best-effort delivery, which means that each intermediate router will attempt to forward packets to the optimal next hop, but that the end-to-end path taken by any individual packet is beyond any node's control.

Web services won't be truly ready for enterprise prime time until the industry provides tools, standards and approaches for managing traffic and ensuring predictable end-to-end performance. Unfortunately, the industry hasn't begun to explore the possibility of binding SOAP to something other than HTTP — preferably, to middleware protocols, such as Java Message Service or MQSeries, that support guaranteed, reliable message delivery.

Nevertheless, Web services work well enough for many real-world applications. Web services implementers have come up with many creative approaches for speeding and scaling delivery of HTML and XML/SOAP traffic over HTTP, without messing with the underlying transport protocol. The most promising techniques for end-to-end Web services traffic management are content caching and choreography. Unfortunately, the industry hasn't converged on the standards needed for interoperability among diverse vendors' traffic management approaches. Until vendors agree on such standards, an effective approach for global management of Web services traffic will remain out of reach.

For example, caching infrastructures have become critical to the

# Web services need traffic mgmt.

delivery of HTML, FTP downloads and other static contents, and increasingly are being used with dynamic database-driven contents. The good news is that there are Web caching standards. The bad news is that there are too many of them. Caching vendors implement a confusing array of proprietary and open specifications.

The situation isn't much better in the content choreography arena. In Web services environments, choreography refers to the structured, rule-driven workflow of information and tasks across network connections between two or more application components. In a SOAP-based environment, choreography refers to the functions performed by integration broker servers, and, to a lesser extent, by the new wave of specialized application data router appliances.

However, unlike IP routers, application data routers typically aren't set up to participate in a global routing mesh that computes optimal routing paths. Instead, application data routers primarily serve as co-processors that accelerate local routing and transformation of XML/SOAP messages. There is no equivalent to Open Shortest Path First protocol or Border Gateway Protocol for XML/SOAP application data routers.

Over the next several years, traditional IP network routers might evolve to incorporate SOAP content routing and caching functions. Recently, the industry has taken a tentative step in the right direction by developing the WS-Routing specification, which provides a syntax for defining the end-to-end routing path of a SOAP message. But WS-Routing defines static routing paths, not the dynamic paths necessary for adaptive, real-time Web services traffic management.

Increasingly, Web services middleware approaches are being deployed in mission-critical corporate network applications. But Web services still have to prove themselves where performance and scalability are concerned. They could become a sprawling, unworkable, unscalable mess if the industry doesn't proactively address open issues surrounding end-to-end traffic management.

*Kobielus is a senior analyst with Burton Group, an IT advisory service that provides in-depth technology analysis for network planners. He can be reached at [jkobielus@burtongroup.com](mailto:jkobielus@burtongroup.com).*

**The new generation of Web services . . . isn't faster or more reliable.**



# Blades attac

Traditional

42

Servers per rack

• Up to 42 1U servers in a standard rack.

- Servers are typically **Intel Pentium III or Pentium 4** single-processor machines running between 1.26 and 2.26 GHz.
- **Each server** comes with its own power supply.
- **Each server** must be connected via cables to network switches and/or storage subsystem.

Blade servers can ease management and optimization

■ BY SUZANNE GASPAR

Dwight Gibbs, director of technology acceleration at Capital One in McLean, Va., says the combination of blade server hardware and management software allows him to deploy new Web servers in minutes, and to do automated patch management on 20 servers at once.

Appro Systems, an application service provider specializing in financial lending applications, is using high-density blades to fit the processing power of 20 servers into the space that previously held three rack-mounted servers. This allowed Appro Systems to increase the capacity of its data center from 350 to more than 600 customers, without adding space or power.

And blade server technology allowed Gator.com to add more than 400 new servers without having to lease additional collocation space, for a savings of \$24,000 a month.

These companies and others are turning to blades to shave server management costs, trim space requirements, and cut the tangle of cables and wires in the data center.

Early blades appeared in fall 2001 from Egenera and RLX Technologies, and focused on high-density, low-power processing for driving front-end applications such as Web serving. Blade technology earned its stamp of approval when HP, IBM and Dell came out with blades last year. Sun released a blade server earlier this month.

Individual blades have evolved from one- to two-processor systems and have added management features that automate server processes. Today, blades are capable of replacing traditional 2U servers for a variety of applications. And IBM last week announced four-way blades based on Intel chips (see story at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 4351).

John Madden, senior analyst for Summit Strategies, says blades address a variety of customer issues. "Customers are looking for more flexibility and better use of space," he says. He adds that improved management features help customers deploy servers quickly, and perform remote management, metering and monitoring.

Longer term, some analysts see blades taking on basic network routing and server load-balancing functions. For example, IBM plans to embed a Layer 4/Layer 7 LAN switch module in its blade chassis.

Having the network and storage connections included in the backplane is significant, says IDC analyst John Humphreys. "The fact that these systems have switches in them ... replaces a whole tier

of switches in your data center."

## Management is Job One

Customers agree that one big advantage of blade servers over traditional rack-mount servers is ease of management. In a blade system, multiple blades plug into a chassis with its own backplane and bus architecture. Power supply, network and storage connections are shared among all the blades.

Customers can perform automated software upgrades, patch management and server setups on multiple servers within the chassis.

Gibbs has used RLX 300ex System and Server-Blades at previous jobs and plans to evaluate blades at his current employer. He says that deploying Web servers with RLX's Control Tower software takes a matter of minutes, and Control Tower helps him install security patches on numerous Linux servers.

"Five minutes to deploy patches is a tremendous boon for management," vs. patching each server. "I can control a whole rack of servers from one blade ... and keep a spare pool of blades on standby for doing database replication, launching test servers or adding Web servers. The blade dies, and I just pull it out and pop in another."

Humphreys says blade servers, such as IBM's eServer BladeCenter managed by IBM Director software, offer solid hardware performance and money-saving server management features. "With IBM Director, you have a streamlined way to manage anywhere from 10 to 20 servers in one chassis. Before you were doing that one server at a time," he says.

## Space, the final frontier

Blade servers also help IT manage the use of space in data centers, and troubleshooting is easier because cable clutter is reduced. "If you've got 42 1U boxes in a rack and you're trying to troubleshoot a hardware problem, you've got to trace the wires and that can get pretty ugly," Gibbs says.

A blade chassis offers power and network connections that are shared among all the blades, eliminating the need for additional cabling. In traditional server setups with hundreds of servers, cables clutter the data center, Gibbs says.

On the other hand, easing cable management isn't a top blade-server draw for IT at Devon Energy.



# data center

pace, but might not be ready for high-end processing.

Brad Whitley, Intel systems supervisor for the oil and gas producer in Oklahoma City, says he keeps cables neat by installing ceiling trays.

However, the ability to reduce the amount of equipment by using blades is a benefit, he says. Through acquisitions, the number of servers in his data center has doubled every year, which also means double the number of keyboards, monitors and mice. "That's extra equipment that you have to keep," Whitley says, while blades automatically have power, monitor, keyboard and mouse hooked up.

Appro has optimized its rack and data center space since deploying HP's ProLiant one-processor blade servers last year, says Richard Caronna, senior consultant and former vice president of delivery services for the Baton Rouge, La., company.

Caronna is putting 20 servers in the same space that contained three HP DL 320-1U servers. Appro's data center originally was designed for using the bigger HP ProLiant 1600s, with power to handle about 210 customers, he says. "Transitioning to the DL 320s got that number to about 350; now we're at a capacity with blade servers that we can push over 600 customers in our data center."

## Money-saving features

While the hard cost of buying a chassis and blades to populate it is roughly the same when compared with traditional servers, Caronna has seen savings in other areas. For example, with a blade chassis there are two power supplies that all 20 blades share. Comparable 2U server systems require 40 power supplies, two for each server.

Appro avoided spending an additional \$200,000 in not having to add a new uninterruptible power supply system. "The power requirements per server have decreased by at least 50% with blade servers," Caronna says.

Appro purchased the gigabit backplane option with its HP blade servers. The backplane has four-gigabit ports that provide throughput comparable to traditional server setups. "We can plug that up to our switches. You end up with very similar throughput," Caronna says. "But at the same time, we've gone from 40 wires to four."

Consolidation of equipment with blade servers is key to reducing costs. Where the DL 320s required purchasing the base system, along with added memory and hard drive, "Now the blade is a package deal, with everything we need on it," he says. "It has more memory than we were putting in the servers before and enough hard-drive space."

Gator.com, of Redwood City, Calif., saved \$24,000 per month in collocation costs through its rollout

of 22 RLX blade server systems. Gator uses RLX 800i Intel blades and RLX 657 Transmeta blades for Web hosting, and Web and application serving, says Tony Martin, vice president of engineering for the Internet ad-serving provider. The blade rollout allowed IT to add more than 400 servers without having to lease a new cage.

He adds, "Rack space is expensive at collocation facilities. With 2U servers, we filled these up really quickly. You can take out the existing 2U servers and put in two RLX chassis and still have three-quarters of a rack left."

David Richter, vice president of infrastructure and application support for Harrah's Entertainment in Las Vegas, plans to roll out blade servers this year to improve CPU utilization on its reservations system, where call volume varies greatly. "We'll be able to dynamically run applications on any number of servers as demand varies through the day. With the old model you had to have enough boxes, enough horsepower dedicated to the application to handle the peak time. Most of the time you just have spare power sitting there unused."

But Richter says blade servers still are early in their life cycle, and aren't ready to support high-end applications such as Harrah's Exchange server environment, which has consistent large volumes and 24-7 access needs.

Madden agrees that blade servers aren't ready today for heavy-duty transaction processing, high-availability applications or applications that require large amounts of storage.

## Challenges ahead

Blade servers face several challenges before they conquer the data center. First, there are no standards allowing users to plug one vendor's blade into another's chassis.

Performance is an issue. "They just have a lot to prove when it comes to these systems, not only in terms of price, but performance," Madden says.

Initial costs aren't any better than those of traditional servers, although there's a case to be made for blades saving money on the management side.

And blades still have to prove that they can scale up to high-end database applications. "Data centers aren't moving to an all-blade architecture any time soon," Madden says.

But blade servers will have a place, Humphreys says, and IDC estimates that 20% of server shipments will go out in blade form factors in 2006. ■

Blades

336

Servers per rack

## RLX Technologies' ServerBlade:

- **14 chassis** fit into a standard 42U rack.
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- **Or, optionally,** 10 dual Pentium 4 Xeon ServerBlades in a 6U chassis for a total of 140 servers per rack.
- **Blades share** chassis power supply.
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- **Each chassis** has power, network and storage connections built in, reducing cable requirements by 12-to-1.



# Attacking Spam at the network's edge

Exclusive product test in conjunction with



**DEMO**

IDG EXECUTIVE FORUMS

New gateway products from MailFrontier and Cloudmark are effective but bypass some end-user control.

■ BY JOEL SNYDER AND JANET TRUMBO, NETWORK WORLD GLOBAL TEST ALLIANCE

While desktop-based antispam software is widely used to keep unwanted, unsolicited mail in check, savvy corporate network managers now are pushing the onus of blocking spam out to their mail gateways. By blocking unwanted e-mail before it hits the corporate mail server, these products lighten the spam load on servers, system managers and end users.

We tested two products of this ilk that were introduced at IDG Executive Forums Demo last week in Scottsdale, Ariz. (see more show information at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 4425). On the hot seat were Cloudmark's Authority and MailFrontier's Anti-Spam Gateway (ASG).

We conducted our tests at Opus One, a Network World Global Test Alliance member and e-mail and security consultancy, and found half the mail during our weeklong test period was spam (49.5%, to be precise). Both products can decrease the amount of spam substantially. Depending on your settings and product choice, between 80% and 90% of the spam coming into your corporate servers can be deflected.

However, based on our overall assessment of these products, they have a ways to go before they're ready for the typical enterprise deployment. Both take the decision of ruling what is and is not spam away from end users. This is a serious shortcoming because the inability to look through quarantined messages would be a major problem for any company that relies on e-mail for more than casual communications.

MailFrontier did an outstanding job of picking out spam — detecting 86% of the spam fired at it over seven days. But its dependence on Exchange and Outlook in this first version of the product and the requirement to add software to end users' systems, as well as some holes in its whitelist management strategy, counteract its superior spam identification algorithms.

On the other hand, Cloudmark's low-overhead, low-maintenance application looks more elegant, but has many of the same per-user customization problems as MailFrontier. Worse, of course, is the relatively spotty performance of Cloudmark's spam identification algorithm compared with the benchmark MailFrontier set.

Both companies have acknowledged they need to go further in letting users verify and control their spam, and plan to solve these problems in the next release of their products.

## How they work

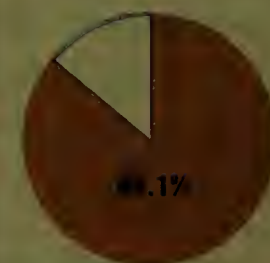
Cloudmark's Authority acts as a Simple Mail Transfer Protocol relay that is inserted in a message stream

## Product: Anti-Spam Gateway

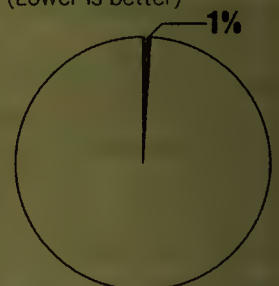
Company: MailFrontier, [www.mailfrontier.com](http://www.mailfrontier.com)

This antispam gateway provides three levels of spam identification — not junk mail, junk and maybe junk — for all mail trying to make its way to a corporate mail server. Using this criteria, MailFrontier's ASG put up some impressive results in terms of blocking spam and letting legitimate mail pass.

**Spam reduction**  
(Higher is better)



**False positives**  
(Lower is better)



MailFrontier starts at \$15 per year per mailbox, with a minimum of 2,000 mailboxes.

pretty much wherever you want, as long as it's before the messages hit the corporate mail server. Cloudmark delivered its relay to us as a plug-in to the widely used Sendmail mail gateway, which we ran on Linux 7.2 on a standard Intel platform. For testing purposes, we put Cloudmark Authority between our mail firewall and a

See Spam, page 44



#### MANAGED



FSM750S



FSM726S

#### MODULAR



FS750



FS726

#### GIGABIT



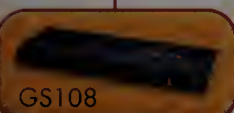
GS524T



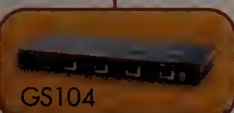
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\* In-Stat/MDR 3Q 2002 High-End LAN Switch Market Analysis, December 2002.

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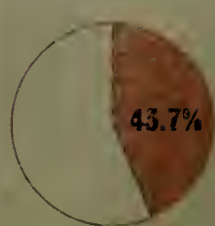
## Product: Cloudmark Authority

Company: Cloudmark, [www.cloudmark.com/products/authority/](http://www.cloudmark.com/products/authority/)

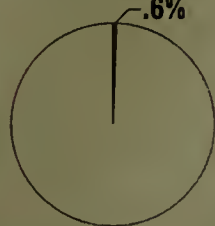
Cloudmark Authority scans incoming mail and rates each message on a scale of 0 to 100 — the higher the score, the more likely it is spam. As an administrator you determine what scores determine junk mail, maybe junk mail and legitimate mail. In our tests, depending on where we set the junk mail settings, we ended up with an unacceptably high false-positive rate or a very low spam-filtering rate.

Junk mail threshold set at 98; maybe junk mail threshold between 50 and 98

Spam reduction  
(Higher is better)



False positives  
(Lower is better)



Junk mail threshold set at 80; maybe junk mail threshold between 50 and 80

Spam reduction  
(Higher is better)



False positives  
(Lower is better)

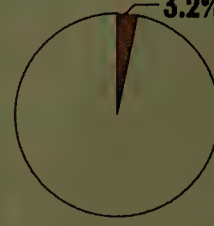


Junk mail threshold set at 95; maybe junk mail threshold between 70 and 95

Spam reduction  
(Higher is better)



False positives  
(Lower is better)

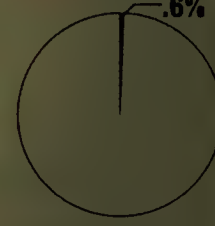


Junk mail threshold set at 98; maybe junk mail threshold between 80 and 98

Spam reduction  
(Higher is better)



False positives  
(Lower is better)



Cloudmark is \$10 per year per mailbox, minimum of 1,000 mailboxes.

## Spam

continued from page 42

mailbox server, but you wouldn't have to do anything that complicated. Because many companies use Sendmail as their mail firewall, you could simply add Cloudmark Authority to an existing Sendmail firewall.

Cloudmark Authority is simple once Sendmail is working. The configuration is stored in three text files that set the policy for handling spam and store the whitelist, a list of domains or IP addresses that will never be called out as spam. A blacklist — domains or IP ranges for which mail will not be accepted — is not explicitly supported in Cloudmark Authority, but is built into Sendmail.

As Cloudmark Authority peers at an incoming mail stream, it determines a score from 0 to 100 for each message, with the higher the score, the more likely it is spam. Depending on the score, it takes one of five actions: quarantine the message locally in a mailbox on the Cloudmark Authority server; drop and delete it entirely; return the message to the sender; tag the subject line (such as adding "[SPAM]") and send it along to the corporate mail server; or, add a header tag to the message (such as "X-Spam") and send it along.

Most network managers will block mail with a very high score (say, above 95), and tag mail that might be spam (with a moderate score, say between 70 and 95). Spam mail that is tagged, either in the subject line or as a separate header, usually can be placed in a separate folder by most clients to help divert spam out of the normal mail stream. Of course, any tagged mail still has to be downloaded by the user and eventually reviewed.

MailFrontier's ASG also is a SMTP relay and has a similar architecture, with a twist. We installed ASG on Windows 2000 Server, along with the included Web-based graphical user interface (GUI). The difference in architecture sits in two profilers included with ASG. The corporate profiler runs on a corporate mail server and watches the log files. As it sees users internally sending messages to addresses outside the company, it dynamically adds those addresses to its whitelist. This means that once mail is sent to someone, anything that person sends back will no longer be considered spam. The user profiler software, which must be pushed out to each client, then scans the address book and the sent messages and uses that to preload the whitelist by sending them to the ASG.

ASG's Web-based configuration GUI is easy to learn and use. In addition to normal management functions, it includes a small report writer for some basic statistics,

whitelist/blacklist management tools and quarantine management. ASG has a fairly limited list of supported platforms: the corporate profiler supports only Microsoft Exchange, and the user profiler works only with full Outlook (not Outlook Express). MailFrontier officials say they will expand both in future releases.

ASG has three levels of spam identification: not junk mail, junk and maybe junk. Mail not marked as spam is sent to the corporate mail server without change. Junk and maybe junk either can be sent on untouched, deleted, quarantined on the ASG server, forwarded to a second address, or sent to the corporate mail server with the subject line tagged.

The design of both products could be a major problem in companies where end users demand to see their own quarantine files, or set their own spam thresholds and actions. ASG allows different users to have different actions. For example, some users could have spam filtering disabled if they wanted, but the network manager must set this parameter. With both products, the network manager must read through the quarantine files to identify false positives and help tune the whitelists. Because Cloudmark requires 1,000 users as a minimum and MailFrontier requires 2,000 minimum users, the quarantine files would become unmanageable within minutes of installation.

Both companies acknowledge that this is an issue and say that they are working on a way to solve these problems in future releases. MailFrontier has an additional software tool for Outlook Express and Outlook users called Matador that lets you manage your whitelist, but this adds yet another piece (and additional cost) to the deployment.

## How well they perform

We tested both products by running a real-time stream of real mail messages through both products to see how they behaved (see How we did it, DocFinder: 4426). With 3,090 messages over a seven-day period, we got a good pile of both spam and nonspam to look at.

In the case of MailFrontier, performance was easy to gauge because there are fewer knobs to twist. MailFrontier did an excellent job both in identifying spam, reducing total spam by 86.1%, and in letting through good messages, with a false positive rate of 1%. When MailFrontier wasn't sure, marking a message as maybe junk, only 110 messages out of 3,090 fell into that category.

Cloudmark's 0-to-100 scale made gauging performance more difficult. We tried setting the thresholds in a variety of ways, and always ended either with an unacceptably high false positive rate or a very low spam-

filtering rate. For the purpose of evaluating Cloudmark, we picked two thresholds between 0 and 100 and assigned the higher one the equivalent junk label, and the lower one the maybe junk level.

For example, if we set the junk category for Cloudmark to be a score greater than 98, and the maybe junk level to scores between 80 and 98, then the false positive rate drops to a very acceptable .6%, but the spam reduction stood at 43.7%, with the maybe junk category collecting 450 messages out of 3,090.

On the other hand, if we set Cloudmark's junk level to 80, with maybe junk between 50 and 80, then the false positive rate shoots up to an unacceptably high 5.3%, with a spam reduction of 62.9% and the maybe junk category collecting only 124 messages out of 3,090.

We also calculated false negatives: messages that are spam, but were not marked as such. Although everyone wants to reduce false negatives, some are inevitable in any system such as this. We thought that a false negative rate in the range of 10% to 20% would be acceptable, although the lower, the better. MailFrontier kept the false negatives to 4.2%, and Cloudmark's product had false negative reading of 16.5% to 18.1% depending on the settings we used.

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## Data deluge

Specialized storage systems help life sciences firms manage fixed content.

■ BY SALVATORE SALAMONE

Storage management isn't easy for any industry, but biotech firms face some particularly vexing challenges. Research and diagnostic tools routinely generate huge amounts of data. Complicating matters is the need to store much of this data in a way that meets a range of regulatory requirements. What's more, some of this information needs to be kept for 35 years or more.

"We have eight mass spectrometer machines that produce 60 gigabytes of data per hour, per machine running around the clock," says Lloyd Segal, president and CEO of Caprion Pharmaceuticals in Montreal. The company uses a mix of Sun StorEdge T3 disk arrays and StorEdge L700 tape library systems. The online stored data is kept on the StorEdge T3 systems, which accounts for about 5 terabytes of capacity.

Industrywide, biotech companies must deal with raw data that doubles about every six to 12 months, according to experts. Much of this data never changes. Most biotech research and development experiments generate lab results that, once produced, are simply kept on file somewhere. And data collected in drug clinical trials — including X-rays, medical history and patient reactions to drugs — is collected once and never modified.

All this data often must be retained for more than a decade if it is to be used as part of Food and Drug Administration new drug submission. This requirement to keep data for such a long time is a storage management challenge.

There have been no specific studies to determine what percent of biotech data does not change — so-called fixed content data. However, in general across all markets 75% of all new digital data is fixed content, according to Hal Varian, dean of the School of Information Management and Systems at the University of California, Berkeley.

For such long-term storage "there are lots of problems with tape and optical," Varian says. "The [data storage medium] formats keep changing. And whenever you have a change in format, you have a big problem with data migration. It's easier to have the data available on hard drives because migrating becomes a much smaller problem."

A number of storage vendors recently have launched products that try to deal with this issue.

In December, IBM Storage Systems Group introduced IBM Total Storage, designed for sharing, managing and securing clinical trial patient information such as magnetic resonance imaging, electrocardiograms and other digital images. The product bundle includes storage hardware, Tivoli Stor-

age Manager software and hierarchical storage management software to manage data migration from network-attached storage and storage-area network devices to tape libraries. And several third-party document management vendors have built links to EMC's Centera storage systems to simplify the way data is retrieved.

Storage management problems were one reason sister companies Celera Genomics and Applied Biosystems overhauled their computing and storage infrastructure last year. The firms replaced a 100-terabyte storage system from HP and HP AlphaServer data center with EMC Centera systems and IBM eServers.

The net gain in processing power in the switch from the AlphaServers to the IBM eServers was minimal — total processing power increased from 1.7 teraFLOPS (1.7 trillion floating point operations per second) to 2 teraFLOPs. However, three EMC storage systems took the place of 20 HP/Compaq StorageWorks systems and other storage devices.

Within the company, the move is seen as a continuation of an evolving process to keep up with data storage demands while keeping management costs in check.

"We are trying to provide high data-throughput reliability and migrating to newer storage technology helps us meet this goal," says a senior manager at Celera who couldn't let his name be used. "An added benefit of moving to newer technology is that the capacity of the systems chosen allows us to reduce the number of discrete storage devices we need to manage."

As a result of this trend to handle the combination of longer-term storage and regulatory compliance, biotech

companies are starting to see smarter storage systems, in general, and smarter storage networks, in particular. "Advanced functions, such as volume management and storage virtualization, can be implemented in the fabric," says Dan Tanner, an analyst at Aberdeen Group. "Storage network buyers will soon find themselves evaluating storage applications and then considering which networks run them."

That was the case for Quantum Diagnostic Imaging, a Dallas company that provides diagnostic imaging tests for referring physicians. The firm recently moved to PACSbuilder, a new digital imaging workflow

application from Merge eFilm.

Merge eFilm bundles its application with EMC's Centera storage systems. The imaging application taps into EMC Centera's ability to manage long-term storage of fixed content data. The combination offloads many mundane management tasks, such as keeping track of specific locations of files.

Once the system stores an image, Centera gives it a unique identifier, which is all the application needs to know to retrieve that image. That means there's no need to keep track of the specific drive, directory or disk volume to which an image is saved.

The benefit of the new system is that it lets radiologists and physicians more easily access medical images

### ■ LIFE SCIENCES INDUSTRY: AT A GLANCE

- **Market composition:** Pharmaceutical, genomic research and biotech companies, as well as academic and government laboratories.
- **Size:** According to Ernst & Young, there are 1,457 biotechnology companies in the U.S. The publicly traded companies accounted for a market capitalization of \$224 billion in 2002.
- **Average time/cost to develop a new drug:** It takes between 12 and 15 years and \$400 million to \$800 million, reports The Tufts Center for the Study of Drug Development.
- **Worldwide biotech IT spending:** IDC forecasts this to grow from \$12.2 billion in 2001 to \$30.6 billion in 2006.

through a Web browser. "This system will help us maintain operational efficiency that will in turn help us deliver better patient care," says Doug Schapiro, Quantum's COO. "The combination of the [EMC and Merge eFilm products] will let us quickly deliver images to the physicians."

Integral to this trend is the intimate linking of storage systems with the applications that generate or access the data. "We are dealing with data now that is fundamentally different than anything we were dealing with 10 years ago," says Mike Poidinger, CEO of the Australian Genomic Information Centre at the University of Sydney. He and others note that because of the vast array of experimental techniques used in biotechnology, companies need help from application vendors to do more intelligent searches of this collection of disparate data types.

*Salamone is senior IT editor at Bio-IT World, a sister publication of Network World. He can be reached at Salvatore\_Salamone@bio-itworld.com.*



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## Management

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## Tackling tough projects

Companies move from individual heroics to project management to get IT rollouts done.

■ BY SUZANNE GASPAR

When Rich Houle joined Northern Trust in 2001, application development projects were dropping on his infrastructure team like marbles hitting a tile floor. Application teams had his IT staff scrambling to meet requests to build out the network to support their work.

When the developers wrote new code or had an application to launch, they'd need the database, Unix or other infrastructure teams to set up the required development, testing and production servers and ancillary equipment.

The application folks were spending too much time managing the build-out, says Houle, senior vice president of worldwide operations and technology in Chicago. Meanwhile, the infrastructure people couldn't relate on a project level. "They lacked project management experience," he says.

After contracting with two Project Management Institute (PMI) consultants, Houle launched a project management office last year. "There's no more 'hero cowboy' pulling it off at the last minute," he says. Now the applications people plan the work with one of the six project managers who coordinate, lead and communicate with all the infrastructure teams.

The demand for IT project management skills has risen on the wave of enterprisewide software rollouts of the last few years. Companies are adding formal roles, programs and training to structure, prioritize and manage IT work that encompasses business units and crosses continents. What's more, certifications such as PMI's Project Management Professional and CompTIA IT Project+ are gaining popularity.

IT staffing firm Robert Half Technology reports a recent spike in demand for IT professionals with project management skills to lead systems integration jobs for Oracle, PeopleSoft and other ERP applications. Demand has increased 30% overall since 2001, and project managers are rated as seventh on the list of hottest IT positions in 2003, according to the firm's survey of 1,400 CIOs. Compensation for project management specialists ranges from \$30 to \$300 an hour, based on the level of experience.

Gopal Kapur, president for the Center of Project Management, agrees there's an acute need for project management skills in IT because of the complexity of systems integration technologies such as ERP, SAP and CRM that require enterprisewide discipline.

Based on preliminary results from the center's annual poll of national conference attendees, the percentage of challenged projects that have compromised quality, schedules or budgets rose to 40% for 2002, compared with 30% in 2001. Conversely, the percentage of failed projects declined from 30% to 20% in 2002, and the percentage of project successes remained steady at 30%.

As the complexity rises and projects grow, the losses are much bigger. "In 1995, we didn't hear of companies filing for bankruptcy or multimillion-dollar lawsuits due to failed projects," Kapur says.

David Foote, president and chief research officer of Foote Partners, sees a similar trend. He has studied failed IT projects in which companies were spending hundreds of millions of dollars on technology that wasn't working. Now deployments are forcing IT to become more accountable and outline a quantifiable return on investment. "Business people said, 'Wait a minute, somebody has to pay for this, and somebody has to be in charge,'" he says.

Project management provides that structure to get IT done, says Foote, who estimates the number of project management offices will double in the next four years. Project management offices, typically under the IT umbrella, employ staffers with experience in managing a range of technology projects. The purpose is to establish a routine way to set up the authority and accountability to support multiple complex projects. The process lets IT get the issues out of the way upfront, manage and educate teams at different stages of projects, monitor vital signs and identify troubled projects that need killing early on in the process.

Project management offers a flexible process for handling sudden changes from technology vendors and the economy, Kapur concurs. "We're beginning to see the relationship between good project management and successful projects," he says.

Northern Trust's project management structure lets Houle more easily prioritize IT work. "In one discussion, I have a list of what we are doing for every single app team. When things get nutty, and we have to make priority calls, it's a piece of cake," Houle says.

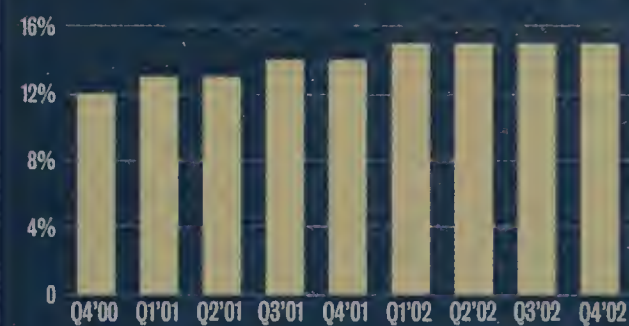
Project management always has been important at Harrah's Entertainment, and IT now is formalizing the role of project management to keep pace with business growth and development projects.

"When you're doing four properties simultaneously in different states, there is one key person who is the lead, and that person is from IT," says Tim Stanley, CIO at Harrah's in Las Vegas. For complex projects, IT assigns two or three project managers and one super-project manager to drive the entire show.

Harrah's uses a "playbook" for business expansion projects and is expanding its use to the development teams. The playbook is a documented resource that out-

## Premium pay

The practice of awarding bonus pay for project management certifications as a percentage of median base salary edged up since 2000 but has held steady through 2002.



SOURCE: FOOTE PARTNERS' QUARTERLY HOT TECHNICAL SKILLS & CERTIFICATIONS INDEX

## Core competencies

IT workers need to develop three skill sets for project management: business/technical, process and leadership.

## Business/technical:

- Knows the business.
- Thinks critically.
- Initiates action.
- Manages risk.

## Process:

- Attention to details.
- Communicates clearly.
- Structures process.

## Leadership:

- Builds the team.
- Manages complexity.
- Focuses on results.
- Effective decision-making.
- Builds strategic support.

SOURCE: FOOTE PARTNERS

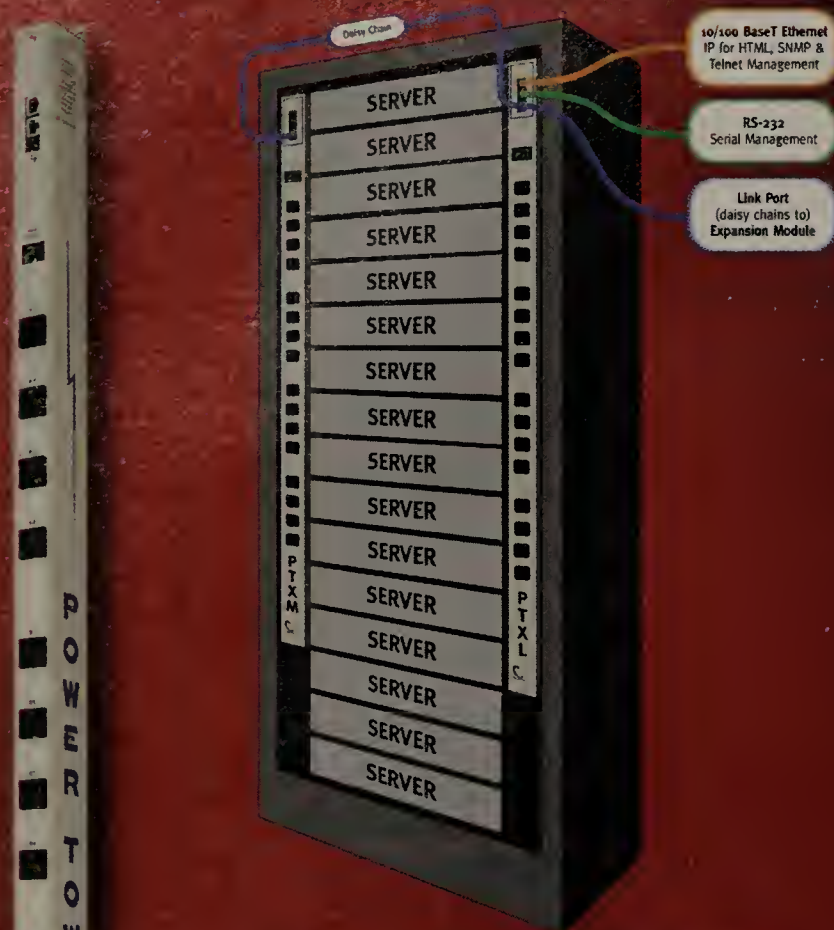
lines IT's role in business expansions, conversions and new openings. These guidelines lead IT through project management protocols, time estimates and required skills to convert systems, procedures and processes. "We can pull together key teams of folks from across the country, different functional areas and map all of this out," Stanley says.

While Harrah's doesn't require project management certifications of new hires, IT invests in training and compensates employees through related performance objectives. "As we do recruiting, we look for that as sort of an extra bonus," Stanley says. "IT professionals need to be as good with people and the process as they are with the technology itself." ■



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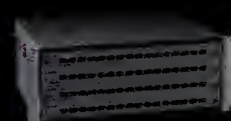
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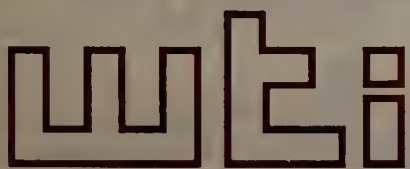
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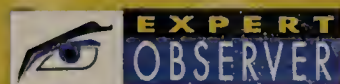
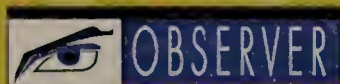
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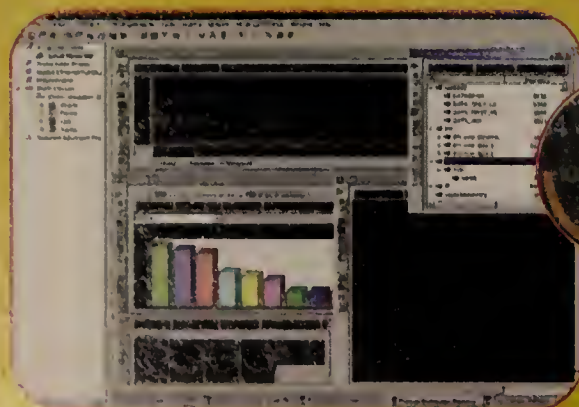
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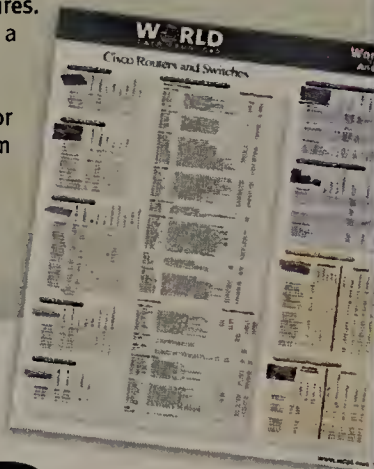
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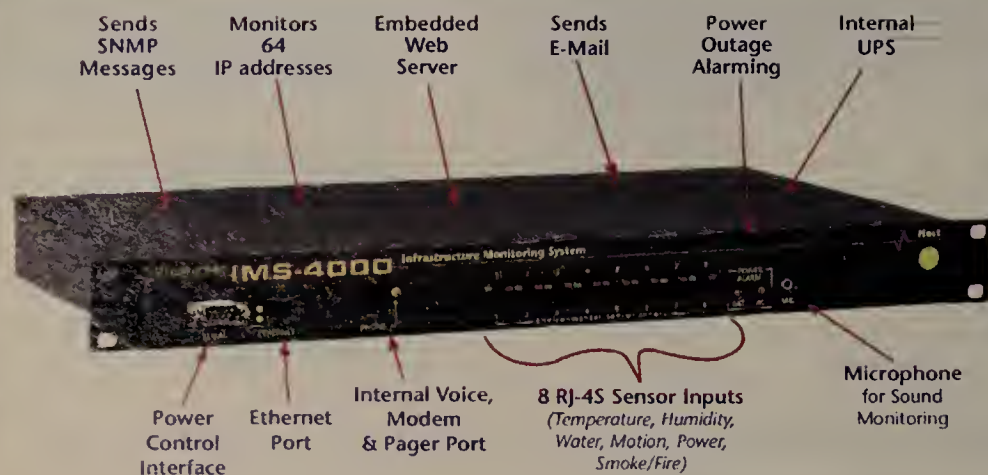
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Programmer/Analyst / Software Art Corp., a software consulting firm, requires software professionals with demonstrated hands-on experience in the following: Unix System Admins Sun/HP Client Server: MS VB .NET, ASP .NET C#/C++/Oracle PL/SQL/Sybase/Windows/Unix Internet Computing: JAVA/CORBA/XML, JAVA Websphere/Weblogic OOPQA Testers: Manual/Automated, JD Edwards, SAS Programmers, Technical Recruiter local to NJ. Send resume to: [nicky@softwareart.com](mailto:nicky@softwareart.com)

S/W Engineers to lead teams to analyze, design, develop S/W appls using SAP R/3, ABAP/4, Java, JScript, JDBC, MS Access, Oracle, Weblogic, Java Web server, etc. on Windows, UNIX, LINUX enviro; develop interfaces, conversions, reports and forms using ABAP for SAP implementation; evaluate, train users/members. Require: M.S. in CS/Engg(any branch) with 3 yrs of exp or BS or foreign equiv. in any of the above field with 5 yrs of relevant progressive exp. High salary. Travel involved. F/T. Resume to: HR, Bahwan Cybernet Technologies, Inc., 209 West Central Street, Ste 312, Natick, MA 01760.

Seeking qualified applicants for the following positions in Memphis/Collierville, TN: **Senior Programmer Analyst**. Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree\* in computer science, MIS, engineering or related field plus 5 years of experience in systems/applications development. Experience with ClearBasic programming also required. \*Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V

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Seeking qualified applicants for the following positions in Orlando, FL: **Senior Programmer Analyst**. Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree\* in computer science, MIS, engineering, math or related field plus 5 years of experience in systems/applications development. Experience with Unix (Sun Solaris), C++ and RDBMS also required. \*Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Systems Admins to plan, implement, maintain and troubleshoot LAN/WAN installations; install, maintain, administer IIS Web Servers, SQL Server, Windows, UNIX, LINUX; design, develop systems for transmission of voice/image data within multiple network environments; install, upgrade network computer hardware/software. Require: B.S. or foreign equiv in CS/Engg. (any branch) with 2 yrs exp in sys. administration. High salary. F/T position. Travel involved. Resumes to: HR, ACT, 3355 Breckinridge Blvd. Suite 128, Duluth GA 30096

Engineering Manager. Analyze and define technical requirements/software specifications based on business requirements from Product/Marketing group; work with engineering teams to build and manage the project plan for development and production of requirements; provide a comprehensive view to management on status of product development and their milestones; and provide project management for associated activities such as new feed/content integration. Must have Bachelor's degree in Computer Science, Engineering or equivalent, two years experience; including one year experience in database design and project management. Must have knowledge of Software Engineering models including Waterfall, Iterative and Evolutionary; ISO 9001; Object Oriented design and implementation; and internet based application development on Windows and Linux. 40 hrs/wk, \$76,000/yr. Must have proof of legal authority to work in the United States. Send your resume to Iowa Workforce Center, 1700 South 1st Ave., Suite 11B, Iowa City, Iowa 52244-2390. Please refer to Job Order IA1101697. Employer paid advertisement.

Web Dev/Programmer. Program courses, create internet/intranet/LAN products. AA in Comp. Sci., Systems Engr, related field plus 3 yrs in job offered or as Systems Analyst or similar duties. 3 yrs exp. w/cold fusion plus 2 yrs exp. w/SPECTRA, SCORM, AICC, SQL Server, JavaScript, HTML, NT environ. Contact Robin Salsberry, 4600 Westown Pkwy, #301, WDM, IA 50266.

Sr. Software Developer for challenging eSales and AI projects. Design software solutions using Java, C++, Oracle, MSSQL, HTML, JavaScript, & XML. Implement software systems & relational database schemas in a client/server environment utilizing Windows NT/ UNIX servers over LAN and Internet. Perform 3-tier client/server application development. Structured analysis & design using Rational Unified Process. MS in Computer Science or equivalent + 1 yr. exp. in software design, development and implementation. Apply to Core Concept, Inc., 1050 Crown Pointe Parkway, Suite 1460, Atlanta, GA 30338 with proof of permanent work authorization.

Systems Analysts to analyze, design appls using Cobol/400, RPG/400, OS/400, Java, JDBC, IBM Websphere under Windows, AS/400 enviro; responsible for project planning, time/cost schedules, quality of deliverables; study and evaluate new technologies/methodologies; provide technical/business guidance for complex user problems; Require: M.S. or foreign equiv with conc. in CS/Engg(any branch)/Business Admin. High Salary. F/T. Travel involved. Resume to: HR, Salem Associates, Inc., 405, 6th Ave., Ste 102, Des Moines, IA 50309.

Synova Inc is seeking professionals with following skills: Programmer/System Analysts, Engineers in Mainframe, Web Tech, Technical/functional (SAP & Peoplesoft), Java, Rational/RUP, UML, J2EE, Unix DBA, Oracle, SQL DBAs. Respond to [ads@synovainc.com](mailto:ads@synovainc.com)

Programmers/System Analysts wanted by GalaxyPlus, leader in tech products to credit unions. Qualified candidates must have BS. Exp of XML, VB, ASP, C#, SQL, IBM AIX, Socket/TCP, C++, DG SQL. DHTML is plus. Apply at GalaxyPlus at 5600 Crooks Rd. Troy, MI 48098, EOE.

F/T Computer Support Specialist. Responsible for scoping, planning, implementing legacy application extension projects and training customer personnel in tool use. 100% travel. Requires in-depth knowledge of J Walk, GUI/400, WinJa and TTT. Requires 3 yrs. of exp. Work background must include providing technical support services to software and/or network end users and supporting J Walk, GUI/400 & TTT customers across a variety of industries. Salary: Competitive. Send resume to: HR - Ref: TS, SEAGULL, 3340 Peachtree Rd, Atlanta, GA 30326. Reference this ad. No phone calls please.

Computer Security Coordinator. 8a-5p. 40 hrs/wk. Plan, dvlp, implmt & co-ordinate systems security features for wireless applics using comp systms security, network mgmt, network security, user interface dsgn & distributed computing skills. Masters or equiv in Comp Sci, Information Systems, Electrical, Electronics or related field of Engg. In lieu of Masters, Bach in specified majors & 5 yrs of progressive work exp as Systems/Prgmr Analyst or Systems/Network Admin using above skills accepted. Resume: Air2Web, Inc., Promenade II, 1230 Peachtree St., 12th Fl., Atlanta, GA 30309.



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## INFORMATION SECURITY

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To apply online (preferred), visit [www.loc.gov/crsinfo](http://www.loc.gov/crsinfo) or call 202/707-5627 to request an applicant job kit. Please refer to vacancy #030022 in all correspondence. Applications must be received by March 5, 2003. As the public policy research arm of the U.S. Congress, CRS is fully committed to workforce diversity.



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## IT Professionals

## Manager

Responsible for tax and revenue system development including application design, development and implementation. Responsible for the return processing subsystem of a large-scale customized integrated tax system that performs processing, audit, collection and discovery functionalities. Lead Joint Application Design (JAD) sessions with groups of users and compile system requirements for the return processing area. Responsible for every deliverable of the full life cycle from inception to completion. Work with users to design and implement the requirements that incorporate configurability and high performance. Responsible for consolidating return edits and performing cross tax types edits. Supervise every aspect of the design, development and testing of the applications and manage functional and technical staff. Responsibilities include integrating multiple tax types and departments such as processing, audit, and collection as well as conducting design and code reviews and presenting each deliverable to the users. Utilize HTML, Websphere, Java, DB2, JavaScript, Java, and Relational Database.

WAGE: \$90,000/year

## REQUIREMENTS:

Bachelor's degree in Computer Science, Math, Business Administration, Engineering (any type), or Information Systems + 5 years exp. in the job offered or 5 years exp. as a Designer & Developer, Team Leader, Manager, or Senior Consultant. Related experience must include at least 3 years of experience in tax and revenue system development including application design, development and implementation. Must have knowledge of (1) integrating multiple tax types and departments such as processing, audit, and collection; (2) at least 1 year experience in: HTML, Websphere, Java, DB2, JavaScript, JAD, Relational Database.

Please send your resume, referencing Job Order Number **WEB304448** to the: PA Career Link/Job Service, Site Administrator, Greene County Team PA CareerLink, 4 West High Street, Waynesburg, PA 15370-1324. EOE.

Positions are available for Product Consultants in Atlanta and Boston and a Systems Support Engineer in Atlanta with an e-business technology company. The company provides solutions that enable corporations and software providers to leverage emerging technologies to more effectively compete in the global market.

Product Consultants are responsible for planning, developing, and implementing custom software applications at customer sites. They gather and analyze requirements of end users and prepare feasibility analysis including requirements.

Candidates for the Product Consultant positions should possess a Bachelor's degree in a Computer field and at least two years' experience in software design and development implementing middleware technology or web enabling and database technologies, including XHTML and XML or JAVA, and demonstrated knowledge of AS400 technology. Must have ability to travel 100% of time.

The Systems Support Engineer is responsible for providing software expertise in developing and producing software systems for three-tier Middleware development and production packages that reside on UNIX and NT servers.

Candidates for the Systems Support Engineer position should possess a Bachelor's degree in Computer Science or a related field and at least one year's experience in systems support for middleware technology using JAVA. Apply by mail with resume to: Natalie Gow, c/o Jacada Inc., 400 Perimeter Center Terrace, Suite 195, Atlanta, Georgia 30346.

LLEORNA Enterprises, a provider of software consulting services, seeks:

Senior Systems Integration Engineer. BS or equivalent in Computer Sci, Engineering or related + 6 yrs exp in SW engng, programming or related. Also 2 yrs exp in Windows & Unix systems admin; knowledge/backgrnd in: RDBMS; CGI; and Perl, C++ or Java; backgrnd in power utilities/energy industry. Mail resume to: 2243 Shannan Dr., South San Francisco, CA 94080.

TechNation Software Consulting, Inc. a software consulting company with its main place of business at Sioux Falls, SD has a position for a software professional whose duties will involve gathering requirements, doing business analysis and proposing solutions for IT needs of healthcare and pharmaceutical industry. The individual will build and lead a team to develop solutions for software dealing with clinical trials for the pharmaceutical industry.

Job Requirements: Bachelors degree with a concentration in computer science or equivalent with additional coursework in Medicine or pharmacology. Should have knowledge of clinical trials along with a minimum of 3 years experience in software programming, Analysis and three years experience in business development.

TechNation provides onsite consulting services to clients across the United States and hence a key requirement for this position is that candidates must be willing to relocate across the country for periods between 3-6 months or as needed.

Send resumes to Navdeep Patyal, 300 N. Dakota Ave. Suite #505B, Sioux Falls, SD 57104 or email [Navi@tncinc.com](mailto:Navi@tncinc.com)

Associate Director, Relationship Management. Columbus, GA. Direct the work unit that performs daily servicing, system/product development, requirements definition, system options, conversions, start-ups, and de-conversion activities on the International Services Department ("ISD") Cardholder platform for clients in 17 countries using 9 currencies. Provide client service for the total Cardholder processing on a complete computer platform and recognize and manage cultural differences in business styles and government requirements for 17 countries.

Competitive Salary. Must have three (3) years of managerial experience within credit card and banking industry using TS1 International Platform systems and written & oral fluency in Spanish to work with clients in 17 countries. Must have legal authority to work in the U.S. Please send resume demonstrating all minimum requirements to: Total Systems Services, Inc., Attn: Pam Toflinski, 1000 - 5th Ave., Columbus, GA 31901.

TechNation Software Consulting, Inc. a software consulting company with its main place of business at Sioux Falls, SD has multiple positions for Software Professionals.

**Sr. Software Engineers:** BS in CS, or equivalent with more than 5 years of recent programming experience or MS in CS with more than 3 years of such experience. Duties entail programming, gathering user requirements and customization of software in either of a) Database Systems which involves database design, data modeling working in both front end as well as backend applications on Unix and Windows platforms. Or in b) systems side programming in Unix, C, C++ which involves product development, working on telecom protocols or development of device drivers.

Both positions require knowledge of allied Internet technologies like Java, JSP, XML, J2EE and ASP.

**Unix Systems administrators:** BS in Computer Sciences or equivalent with at least five years of experience in an enterprise environment. (i.e. more than 500 users) Duties include extensive use of Network Implementation and Administration, System Integration, Backup and recovery, shell scripting and System Security. Experience in Management of Enterprise Network Storage devices (SAN or NAS), HP and Solaris Servers, switches, HUBs and in Veritas NetBackup systems.

TechNation provides onsite consulting services to clients across the United States and hence a key requirement for all positions is that candidates must be willing to relocate across the country for periods between 3-6 months or as needed.

Send resumes to Madhukar Gangadi, 300 N. Dakota Ave. Suite #505-B, Sioux Falls, SD 57104 or email to [madhukar@tncinc.com](mailto:madhukar@tncinc.com). Fax: 530-733-2775

Vt. Based consulting co. with clients located on the East Coast has multiple openings for IT professionals. Looking for the following skill sets:

- Oracle and Progress developers
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- J2EE
- web based developers Java, HTML, ASP
- Forte
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- multiple Rdbms Oracle, SQL Server, Informix
- Legacy systems exp. for conversion projects
- Auto and manual testers

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Intellysis Technology is a fast growing Chicago based IT consulting group with clients all over the USA in leading edge areas such as eCommerce, ERP, Automated Testing and Client Server MultiTier Systems. Intellysis is looking for Programmer Analysts, Software Developers and Project Managers with experience in one or more of the following skills:

C++, C, VC++, Java/JSP, ASP, ActiveX, COM, DCOM, CGI, Servlets, CORBA, Perl, J++ HTML, DHTML, XML, JAVA APPLET, COLD FUSION, HTTP, SEGUE/RADVIEW TOOLS, Large Scale System Design/Architecture Testing Experience

All jobs require a minimum of a Bachelors Degree in Computer Science or related field or its equivalent in education and/or experience.

Project Managers require a Masters in Business Administration or its equivalent in education and/or experience.

If you are interested in our company, please mail, fax or e-mail your resume including reference number CW0103 to: INTELLISYS TECHNOLOGY, LLC, 801 N. Cass Ave., Westmont, IL 60559; fax (630) 455-1333 e-mail: [recruit@7hillsys.com](mailto:recruit@7hillsys.com)

A position is available for a Senior Business Analyst, Consulting with an Atlanta-based technology solutions company. The company architects and designs next generation software for point-of-sale and internet systems in the retail industry including entertainment, petroleum with convenience or food stores, and restaurants.

The Senior Business Analyst, Consulting will be primarily responsible for providing consulting services to analyze business processes and define best practices for the implementation of complex software applications for the company's clients.

Candidates for this position should possess a Bachelor's degree in a computer field whose degree program must include analysis and redesign of business processes; analyzing, designing, and managing database systems; creating user guides; and training other users. Job requires demonstrated knowledge of operating systems and software applications including Windows, Macintosh, UNIX, MS Project, and MS Visio; and C++, Visual Basic, and SQL.

Apply by mail to: Christie LoCurto, Radiant Systems, Inc., 3925 Brookside Parkway, Alpharetta, Georgia 30022

Manager, Client Facing Systems (Washington, DC) - Consult with clients to plan, design, implement & deploy extranet and web-based technology solutions. Lead multi-vendor integration, tool selection and implementation. Negotiate vendor contract terms. Manage complex extranet development/integration projects, provide end user training, and contribute to group and departmental planning, budgeting & technology architecture design processes. Utilize exp. in developing & implementing intranets/extranets in a professional services organization, including exp. in Cold Fusion, SQL Server, JavaScript, Visual Basic, VBA, MS Exchange & SMTP. Requires M.S. in Comp. Sci./Engineering/MIS or related plus 1 yr. related exp. Please send resume & cover letter to Akin Gump Strauss Hauer & Feld LLP at [washstaffrecruiting@akingump.com](mailto:washstaffrecruiting@akingump.com) or fax to (202) 452-4807. EOE.

Developer. Will develop, test, implement and support business systems of low to medium complexity on multiple platforms including client server, mid-range and mainframe for marketing applications. Will act as system administrator for Corema application used to deliver specific offers to customers at the Point of Sale. Will utilize COBOL, SQL and Easytrieve Plus languages. Will work on multiple assignments simultaneously and perform trouble shooting, problem solving, and analysis. Will interact with Project Managers, Systems Analysts, Developers, Vendors, DBA's and various Technical Support personnel as required to support new and existing applications. Minimum requirements (education, training, experience): Bachelor's Degree (or for equiv) in Computer Science or closely related field and two years progressive experience in job offered or related occupation as software developer or programmer/analyst. Also, must possess (1) demonstrated expertise working on large main frame platforms; (2) demonstrated knowledge of operating; and (3) network systems such as UNIX or Windows NT and relational database management systems such as DB2 and Access. Offered salary is \$61,516/year (40hrs/wk). Std Company Benefits. Send resumes in duplicate to: Labor Exchange Office, Case #200115043, 19 Staniford Street, 1st fl., Boston, MA 02114.

Lead Oracle/Internet Developer sought by pharmaceutical R&D Co. in Princeton, NJ. Candidate must have a Master's degree or equiv in Comp Sci & at least 5 yrs of exp in IT, specifically applications development. The following skills are required: 1+ years in pharmaceutical industry; exp w/business development environment and Strategic Intelligence function; min. 3 yrs. exp in web development using Java/JSP/Servlets/Oracle (versions 7-9i, Oracle Application Server 9iAS); Oracle DBA certification; exp w/ Documentum, WDK 4.2.4; Documentum Web Development Kit; exp w/ data modeling using ERWIN & Visio; exp in full life cycle software development of IT projects & applications including design, development, testing and delivery. Ability to lead a small team; manage vendor responsibilities on projects; possess excellent verbal/written communication skills in order to provide technical options to business users. Send resume to: Strategic Staffing, BMS, M/S E14-12, Route 206 & Provinceline Road, Princeton, NJ 08540 Job Code: NS-788.

## Director ERP Applications

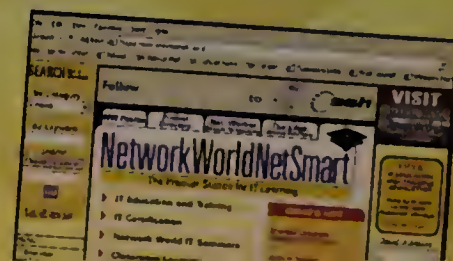
Western New York based manufacturing company seeks top quality candidate. MBA required. Proven ERP major application implementation experience with (Oracle, SAP, JD Edwards or Peoplesoft). Strong manufacturing systems experience essential. Experience building fault tolerant systems. Solid knowledge of Internet technologies and strengths in system development methodologies. Ideal candidate must be a leader with excellent communication/interpersonal skills. Outstanding environment, benefits and compensation with this highly respected organization. Respond to Personnel Resource, Inc. via email: [prinorth@perresource.com](mailto:prinorth@perresource.com)

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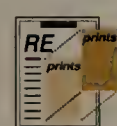
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## Spammers

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much a bandwidth hog as it is an image problem for universities, she says.

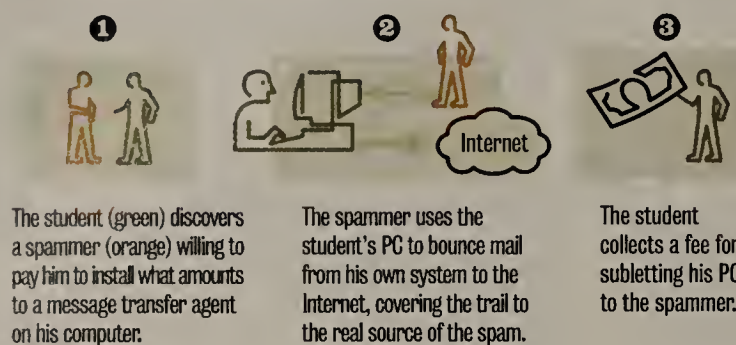
University IT executives say they hope to minimize their exposure to this spamming technique based on the relative ease of tracking the offenders and through strict policies forbidding students to use PCs as servers, a measure instituted after Napster paralyzed college networks.

"Paying students to spam is a relatively new phenomenon so we don't know the extent of the problem," says Steve Worona, director of policy and network programs for EduCause, a group that promotes the use of IT in higher education and includes thousands of schools around the world. "We'll try to put people together so they can come up with some best practices."

Those practices might not have

## Spam payola

Tufts University late last month discovered that some of its students were subletting their network access to spammers. Here is how it worked:



to be confined to schools, experts say. It's possible that the mail relay program could be slipped onto corporate PCs without users noticing via rogue Web sites or spam packed with a virus.

Tufts currently is deciding on the best practice for punishing one student after discovering he

agreed to install what amounted to a message-transfer agent on his dorm room computer that served as a spam relay in exchange for \$20 a month.

After admitting to the arrangement in which the student relayed thousands of e-mails offering services for burning CDs and DVDs, the student said a handful of others were involved in the same payola that took advantage of the school's gigabit connection to the Internet.

"We had complaints from people saying our domain was the source of spam," Tufts' Tolman says. "We checked the logs, identified the IP address the spam was coming from, matched that with a [media access control] address and went to the kid's dorm room."

What they discovered was a small program called Mailsafe.exe on the student's PC, but no tracks back to the spammer.

A handful of companies that offer messaging and other services use the name Mailsafe, but the moniker is likely one of a laundry list of benign names for the program used to escape detection, experts say.

"The students involved in this found the opportunity themselves—they were not contacted by the company directly," says Tolman, who adds that the software likely was downloaded via FTP or some other file-sharing protocol. "But right now, we know the relay by the students has stopped."

Tufts leans toward educating first-time offenders about the downsides of their behavior, saving harsh punishment for repeat delinquents, she says.

"We can't control the software students load on their machines," Tolman says. "We can only act once they use it. We can't catch a kid before he spams."

That means Tufts continues its

due diligence poring over logs looking for suspicious activity, an exercise Tolman says eats up half of a full-time salary per year, or roughly \$30,000.

"It all sounds like a poor man's grid computing," says Greg Scott, IS manager at Oregon State University College of Business in Corvallis, who had not heard of the spamming-for-pay tactic, but was not surprised. He says Oregon State throttles down bandwidth available to residence halls because of file-sharing and restricts the ports students can use. "Universities are for experimenting, pushing the edge. But some students push harder than others," Scott says.

Frank Grewe, manager of Internet services for the University of Minnesota in Minneapolis-St.

Paul, also wasn't surprised. He says the university does not let client machines be used as servers, employs static IP addresses and tracks the amount of traffic going to and from those addresses.

David Wood, manager of the network group at the University of Colorado in Boulder, uses tactics similar to Scott's and Grewe's. He says spammer's payola would be easy to track and punishment would be swift.

"We kick our students off the network if we have to," says Wood, who admits that three to four permanent bans already have been handed out, mostly because of hacking. ■



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## More spammer tricks

Regardless of what you think about spammers, their stealth techniques seem at times to be a testament to ingenuity. One new technique involves targeting unsecured wireless hotspots to unload torrents of e-mail, then disappearing, according to spam filter vendors.

"I call it spam driving," says Stu Sjouwerman, CEO of Sunbelt Software, which develops a spam-blocking gateway called IHateSpam.

He compares this spamming method to the practice called war driving, in which people drive around cities with a laptop and wireless card, plotting and exploiting open wireless access points. "It's the old zombie idea recycled," he says, referring to a hacker's practice of compromising Web sites without the operator's permission and using them to launch attacks.

Lesley Tolman, director of networks and telecommunications for Tufts University in Medford, Mass., says the school is in the process of pinpointing wireless access hotspots around campus.

"We have a small number, but we are trying to manage their proliferation," she says.

Another spamming technique that has popped up, according to Linus Upson, co-founder of start-up Q-Spam, is use of a mobile spam command center. One spammer he knows of has a van loaded with computer equipment that he uses to drive to small and midsize ISPs, where he offers cash bribes for an hour or so on their networks. The ISP literally runs a cable out the back door and into the van.

"He spends about \$40,000 a month putting together a spam campaign and makes \$100,000 in revenue," Upson says. "He only spends a few hours over two to three days sending out his spam. The rest of his time is spent setting everything up."

It's that kind of ease of execution that keeps spammers working and the spam problem growing. The volume of spam has more than doubled this year from last, according to spam filter company Postini.

"The cost of being a spammer is so little, and you have so little risk," says Dan Kirdsen, a senior analyst for Delphi Group.

— John Fontana

## Polycom

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Welty says he also likes the ability for each user to choose a view of a multi-point conference best-suited for his needs, rather than one view being thrust upon all users. Up to 16 people can be displayed onscreen side by side with an active border around the person speaking.

Polycom also rolled out Conferencing Suite 5.0, which features improved call management and scheduling features, including the ability to schedule a call via Microsoft Outlook. Users also can reserve a set amount of bandwidth to be used with each call. The suite also can be used to help manage non-Polycom endpoints.

Other enhancements and announcements this week from Polycom:

## “I can now do 32 sites in one video call without cascading to another call.”

### Guy Welty

Manager of global media networks and collaborative services, W.R. Grace

● A new Executive Collection of high-end video units with single or dual 50- or 61-inch plasma displays built into a credenza or assembled as a stand-alone unit.

● A new iPower 9000 series of PC-based group video endpoints, which will replace the 900 line, that include the ability to record conferences, share computer-based data at native screen resolution and new IP tunneling capabilities for use with third-party VPNs.

● Enhancements to the ViewStation and VS4000 group video appliances, including support for the new high-resolution PowerCam video camera, better management features that allow the lockdown of certain functions and interfaces, and unique default passwords for each unit shipped.

● On the desktop, the ViaVideo endpoint now supports up to 512K bit/sec and 30-frame-per-second video.

By offering endpoints, management and network components, Polycom is helping insulate itself from competitors Tandberg, VCON and Sony, and the growing market of Web conferencing vendors, says Joe Gagan, a senior analyst at The Yankee Group.

Gagan says that because Web conferencing can be easier to use and requires less specialized equipment, and that not everyone wants to see the person with whom they're speaking, could affect the overall growth of videoconferencing.

Most of the new features and products will roll out later this quarter or in the second quarter. Many of the endpoint upgrades will be available for free via Polycom's Web site. The MGC-25 starts at \$22,000, depending on configuration. Conference Suite 5.0 will start at \$25,000 for 25 devices.

Polycom: www.polycom.com



## VoiceCon

continued from page 1

lot of other projects that I can get at least a six-month ROI on before I go forward with IP telephony," which might have a longer ROI, and is harder to prove, he says.

Fidelity is still moving cautiously with IP telephony. Morgan talked about the company's deployment of homegrown soft-phone applications and USB handsets as a way to deploy IP telephony cost effectively.

Morgan said the ROI on hard phones is a "tough sell" because they are almost twice as expensive to deploy as a software-based phone and headset. Fidelity's soft-phone is based on the Telephony API standard and operates with a Cisco CallManager. The software integrates the company's IBM Lotus Sametime instant messaging client, as well as Microsoft Outlook, with telephony, letting end users click on a name in a directory and choose a method

of communication — e-mail, chat or phone call.

Morgan said the company has about 3,200 softphones deployed among several departments and with teleworkers, but he is dealing with issues such as E-911 emergency reporting, and the reliance on a PC to make phone calls.

Voice-over-IP security issues were on the minds of many VoiceCon attendees because of all the reports of high-profile network attacks lately.

In a debate at the show on IP telephony security, Karyn Mashima, Avaya's vice president of strategy and technology, squared off with Lee Sutterfield, president of SecureLogix, which makes equipment for securing traditional PBX voice systems.

"In legacy voice, the risk has been very low" for system misuse or attack from individuals or groups outside a company, Sutterfield said. But he added that TDM toll fraud is still a threat, costing U.S. businesses



**“The security threats that exist for the infrastructure today are real and are a major concern, even without voice.”**

**Don Proctor**

Vice president, Cisco's voice technology group

around \$12 billion per year.

"When you deploy [IP telephony], you get many benefits and new features, but you also have to worry, and I mean really worry, about viruses, targeted denial-of-service attacks," and the security of packetized voice conversations, which are not impossible to intercept, he added.

Mashima agreed that IP telephony security can be a problem, but said that the risks are similar to ones taken by millions of businesses that send confidential e-mail, or do business over the Internet, where credit card numbers are sent to and stored on Web-based servers.

"So is IP telephony technology inherently secure? No," she said. "Can it be secured? Yes."

Other vendors and users at the show agreed that IP telephony vulnerability is a problem that is fixable with standard security practices and technologies, such as firewalls, intrusion detection and VPNs.

"The security threats that exist for the infrastructure today are real and are a major concern, even without voice," said Don Proctor, vice president for Cisco's voice technology group, who gave a keynote address at VoiceCon. "Certainly, putting voice traffic on that infrastructure makes people more aware."

On the security issue, Fidelity's Morgan agreed that security is the same for any server or IP PBX.

"Your network security is no better than the weakest part," Morgan said. "If one server is not patched and an attack comes, it's going to get hammered on." And if that server happens to be an IP PBX, that could be seen as a negative consequence of running voice over an Internet-attached network, he added.

Technology questions on how call-processing intelligence should be deployed on a converged network and the ever-present issue of quality of service were hot topics among attendees.

## Talking up IP voice

The productivity benefits of IP telephony are real, according to a recent survey of 100 IT executives.

Benefit	Response	Average benefit level
Faster moves, adds or changes	<p>28% Yes 72% No/don't know</p>	1.5 hours per move per user.
Faster deployment of phones at new offices	<p>45% Yes 55% No/don't know</p>	3.8 weeks per new office opening.
Easier move, add or change process	<p>28% Yes 71% No/don't know</p>	3 more moves per year.

SOURCE: SAGE RESEARCH

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## Ruling

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granted the ILECs too much leeway in the broadband market.

WorldCom, another large UNE switching seller, expressed similar views. "We are confident the state commissions will continue to make the responsible decisions necessary to keep their local markets open," said Wayne Huyard, president of MCI Mass Market for WorldCom in a statement. The company also expressed reservations about the FCC's decision to deregulate the broadband market.

## Powell outnumbered

Powell, who had sought a more ILEC-friendly ruling overall and dissented on a number of core issues, was outgunned in the final vote 3-2.

While Republican commissioner Kathleen Abernathy joined Powell, Republican Kevin Martin joined with the two Democrat commissioners to form the majority.

The rule change that the majority pushed through that seemed to upset Powell the most was the decision to turn over to the states the power to determine what ILEC elements should be unbundled.

"The nation will now embark on 51 major state proceedings to evaluate what elements will be unbundled and made available to CLECs," Powell wrote in his dissenting position.

"These decisions will be litigated through 51 different federal district courts. These 51 cases will be decided in multiple ways — some upholding the state, some overturning the state and little chance of regulatory and legal harmony at the end of the day," he said. "These 51 district court cases are likely to be heard by 12 federal courts of appeals — do we expect they will all rule similarly? If not, we will eventually be back in the Supreme Court."

While he decries what he foresees as a long litigation process, if the decision ends up back in court, there's a chance Powell will see some of his ILEC-friendly vision become reality.

"The D.C. Court of Appeals could very well overturn the parts of this that Powell gave away," Nolle says.

"So you could end up with a sweeping victory for the [local exchange carriers] and a disaster for the interexchange carriers," he adds.



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## BackSpin Mark Gibbs



# White box or brand name?

**S**everal readers wrote to comment on the choice of white-box hardware for my son's school computer lab (see [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 4445). Jason Lester, for example, writes:

"You're doing the school a disservice by buying 'white boxes' from a local company. Been there, done that, and will never do it again. And paying more for [white-box] computers [than we spent on Compaq PCs] makes it even worse.

Readers questioned whether the school's white-box provider — a term used to describe companies that assemble their own machines from commodity parts — could deliver on price, support and maintenance. Let's look at each of these issues.

Lester says he can get a Compaq PC similar to the ones we're getting for almost \$150 less, which I'm sure is true. But we couldn't. We're only buying 15 PCs and one server so we don't qualify for the price breaks available to some schools. But at that price we get on-site installation we get from our vendor (MJP Computers in Oxnard, Calif.).

I hear great things about our vendor's support, which is different from the horror stories readers tell about how searches for even simple answers from brand-name vendors turn into quests that would make a hardened mercenary blanch. It

always sounds good when brand-name vendors do the sales pitch, but the reality is never as painless as they claim. And if such a thing as real hard-core support exists you'll be paying handsomely for it.

Maintenance is an interesting issue. If you are a big organization and have your techs trained by your brand-name vendor, you can get priority service, but for the rest of us it's the hold from hell: 20 amazingly dumb questions from the first-level tech, another hold from hell, a repeat of the same 20 questions by the second-level tech. And if you argue your case successfully, maybe service will get to you tomorrow. Elapsed time: around two hours on the phone and a machine that's dead for at least 48 hours.

Our vendor offers same day on-site service if you call before 3 p.m., doesn't make you prove your blood type before believing you have a problem, and even will loan you replacement parts and PCs instead of the usual "send it to us and when we get it we'll send you a replacement" routine that takes, at the very least, two days. And as for service costs, our vendor charges \$25 per hour for schools for nonwarranty work!

Another issue that affects both support and maintenance is the vendor's quality. Usually when you order a batch of identical PCs you expect they will be identical. I have heard several stories of major

brand companies shipping batches of PCs that were supposed to be identical but in reality had a mix of motherboards, drives and network cards. These big brands seem to occasionally forget that organizations order batches of PCs to a single spec to minimize support costs.

I know some of you have had wretched experiences with white-box vendors just as some of you (myself included) have had rotten experiences with brand-name vendors. While there certainly is an element of luck involved when you make a vendor choice, you can find a local vendor that is reliable, available and reasonably priced, that provides good service and support, and that gives a damn about you in a way the big brands can't because of their scale of operations.

So I'm not saying that you shouldn't buy from brand names. On the contrary, there might be times when the cost benefit for large-scale enterprise purchases is undeniable and where you can forge an effective working relationship with the vendor.

But if you're driving information technology in a small or midsize business, you really should look at the benefits and advantages of doing business with your local white-box vendor. The benefits can be more than just pricing.

*Sales quotes to [backspin@gibbs.com](mailto:backspin@gibbs.com).*



## 'Net Buzz News, insights, opinions and oddities

### Buzz

continued from page 1

our beta software," gushed Liquid Machines CEO Jim Schoonmaker, who's pushing policy-based security that protects at the file level and looks nifty at the trade-show level.

"We've seen the market coming to us," bragged Buzz Bruggeman, whose Active-Word Systems promises to save PC users time and money by saving them countless keystrokes. Comes with a cool, personal ROI feature.

"We're a recessionary product," boasted ITWorx CEO Youssri Helmy, whose NetCelera bandwidth-optimization appliance is worth a look for those still angling to cut costs.

A quartet of seen-it-all graybeards on hand for a panel discussion were happy to accentuate the positive, yet they, too, had words of caution.

"Deals are getting done, but not on the terms that the entrepreneurs I know are happy about," said Mitch Kapor, long-ago founder of Lotus and more recently a venture capitalist active in open source.

There was more talk about incremental advances than any next big thing.

"The next big thing is all the little things that make things work," said Les Vadasz, president of Intel Capital. If the show had an overarching theme, it was just that: making the things we have work better.

For example, Kubi Software surrenders to the reality that workers live in their e-mail by letting Microsoft Outlook and Lotus Notes users collaborate in groups using those familiar interfaces. Instead of forcing them into another application. Oddpost's snazzy demo of its Web-based e-mail service kicked the stuffing out of my preconceived notion that no one would pay \$30 for what's been a freebie. And Bloomba from Stata Labs looks ready to bring order to even the ugliest in-box.

Antispam outfits MailFrontier and Cloudmark won bravery points for submitting to preshow *Network World* test, but the results reported onstage only confirmed sus-

picious of filtering skeptics that these products snag too many legitimate messages and aren't all that good at weeding out junk. Ironport did better with a gateway tool that lets network administrators easily identify the biggest spammers and block their IP addresses by the thousands.

Security companies such as BigFix and Preventsys were marching the ball downfield, too, with promising products that speak directly to problems of the day. BigFix finds and patches vulnerabilities before they jump up and bite your behind. Preventsys automatically audits network elements for compliance with security policies.

Another sign of sanity returning to the industry was that this Demo featured few tech toys. . . . Those that were shown didn't leave anyone panting for more.

TerraDigital's "digital audio jukebox" uses a nifty touchscreen to give audiophiles easy access to their music collections, but doesn't have a prayer at \$895 a pop.

FullAudio, which learned the hard way that young people won't pay monthly fees for music, has a clever description of its new target market — "the employed" — but will find that crowd no more anxious to pony up.

Lifescape's Picassa Sharing Network promises to make sending digital photos to Grandma a snap — and looks idiotproof — which means, well . . . grandparents will be happier with their idiot grandkids.

The most eye-opening demo came from Digital Sun, whose X.Sense wireless soil sensor kept an onstage patch of grass from being flooded by a broken sprinkler head. It promises big savings for owners of automatic irrigation systems and looks like a bargain at \$150.

The lamest demo? IBM's InfoScope technology, which involved a woman who doesn't speak German taking a digital photo of a subway sign written in German in order to send it wirelessly to a server that would spit back a translation.

And the biggest bomb: WebEx. Nothing in its demo worked, including the presenter's attempt at covering up with nervous laughter.

*Have 2 cents of your own? The address is [buzz@nww.com](mailto:buzz@nww.com).*



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## Introducing the NetVanta<sup>™</sup> 3000 Series from ADTRAN<sup>™</sup>.

- Cost-effective access routing for branch office connectivity and Internet access
- Recognizable Command Line Interface (CLI)
- No retraining or costly certification
- Built-in stateful inspection firewall
- Interoperable with other standards-based routers
- Optional PBX connectivity
- Optional dial backup system
- Built-in DSU/CSU for WAN termination
- Free 24x7 telephone technical support
- Optional extended installation and maintenance program



This powerful new access router from ADTRAN is everything you need in a router, and then some, at a cost that's up to 55 percent less than other brand name routers. This high-quality, low-cost alternative features a stateful inspection firewall, a DSU/CSU, and a familiar CLI. Comprehensive dial backup and PBX connectivity are available at a minimal cost. Interoperable with other standards-based routers, the NetVanta 3000 Series fits seamlessly into your existing network. Backed by unlimited telephone support and a 5-year warranty, the NetVanta 3000 Series is clearly the intelligent choice.

New vendor to routing? *No way!* ADTRAN has incorporated its router technology into selected WAN connectivity products for the past five years; with more than 75,000 now installed in networks around the world. The NetVanta 3000 Series is the latest in a long line of market-leading internetworking and connectivity solutions, from a company with a 17-year history of customer satisfaction.

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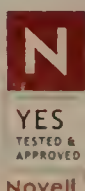


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